PACKAGE engineering

Pressure aspects of viscous product filling

A penetrating discussion of engineering, production, and machinery control problems entailed in the filling of viscous products—with emphasis on pressure details and relationships. (See page 25)

Planned impact reduction cuts jar breakage

Systematic training of line workers regarding hazards of repeated impacts and the development of equipment modification and operating practices leads to glass jar breakage reduction. (See page 34)

Close control of decentralized packaging

A step-by-step review of just how to develop and install a centrally managed packaging operation for use at far-flung branches including corrugated box testing and specification data. (See page 48)

Complete table of contents on Page 2

SEPTEMBER 1957

VOLUME 2 • NUMBER 9

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Pocket-Packs for the Cigar Industry

Photo courtesy
Bayuk Cigars, Inc.

SCANDIA

Manufacturers of Better Packaging Machinery

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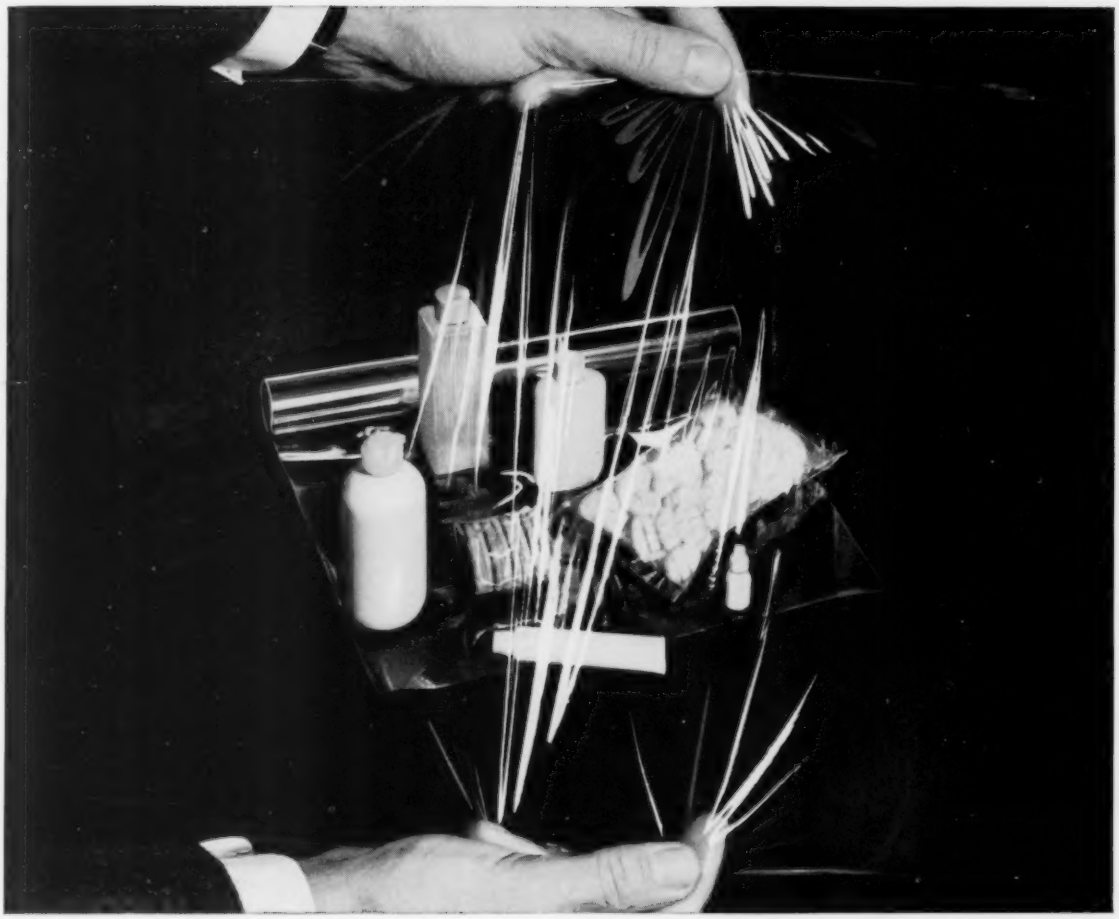

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SEPTEMBER 1957 • VOLUME 2 • NUMBER 9

PACKAGE engineering

AN ANGUS J. RAY PUBLICATION

For your calendar

September 16-18. AMA Packaging Clinic #904-71, on Packaging and Distribution, LaSalle Hotel, Chicago. Contact: John A. Warren, American Management Association, 1515 Broadway, Times Square, New York 36, New York. *Telephone: Judson 6-8100.*

October 1-3. Third Joint Military-Industry Packaging and Materials Handling symposium, Fort Lee, Virginia. Contact: Procurement Division, Deputy Chief of Staff for Logistics, Department of the Army, Washington 25, D. C.

October 3-4. Quartermaster Association 10th annual national convention, Fairmont Hotel, San Francisco, Contact: The Secretary, P. O. Box 105, Presidio of San Francisco, California.

October 28-30. Packaging Institute, 19th annual forum, Hotel Statler, New York. Contact: Charles A. Feld, executive director, Packaging Institute, 342 Madison Avenue, New York 17, New York. *Telephone: Murray Hill 7-8875.*

October 28-31. Society of Industrial Packaging and Materials Handling Engineers, 12th national industrial packaging and handling exposition and SIPMHE short course, Atlantic City Auditorium, Atlantic City, New Jersey. Contact: C. J. Carney Jr., managing director, Society of Industrial Packaging and Materials Handling Engineers, 111 West Jackson Blvd., Chicago 4, Illinois. *Telephone: Harrison 7-6123.*

After September 1, 1957, the executive and editorial offices of Package Engineering will be located at 185 North Wabash Avenue, Chicago 1, Illinois. Telephone FInancial 6-1440.

Articles

25 **Pressure filling of viscous products,** by Robert E. Sueter, production manager, and John D. Henze, plant engineer, The Mennen Company
Development of a way to fill viscous products at relatively high speeds without getting air bubbles in the filled containers required the solving of many difficulties in the use of air pressure and its control.

29 **Evaluating the Sutherland ink rub test on printed foil labels,** by Robert S. Davidson, research and development laboratory, Reynolds Metals Company
A discussion of the use of equipment for such testing and some results obtained (including special attention to defining an abrading medium and the end point) and other factors affecting test reproducibility.

34 **Reducing packaging line impacts to minimize breakage of glass jars**
The Quaker Oats Company uses a series of practices conducive to impact reduction on glass packaging lines, stressing both mechanical and personnel factors—and details of changing to a lighter weight jar.

42 **Cellophane and high speed packaging machinery,** by Andrew W. Crawford, Jr., film service supervisor, film division, Olin Mathieson Chemical Corporation
Reviewing the relationship between machinery and material, this article discusses requirements of machinery, uniformity of film, film feed and cut-off, heat seals, and such factors as the locating of a sheet on a package.

48 **Centralized development of a decentralized packaging operation,** by Frank Kautter, shipping superintendent, Signode Steel Strapping Company
In developing a package for small quantities of steel strapping suitable for use at far-flung branches, there resulted a step-by-step basis for such a project—and practical suggestions of just how to carry it out.

64 **Three schools offer courses in package engineering**
With their courses about to start, New York University, Rutgers University, and Stevens Institute announce brief descriptions of their programs and details concerning registration for them.

Departments

4 **A note from the publisher**

8 **Letters to Package Engineering**

58 **Announcements of machinery and products**

61 **Industry literature available free**

65 **Classified advertising**

66 **What we think** (our editorial page)

Reader service card inside back cover

Our December 1957 issue will carry a cumulative editorial index for the year listing our feature articles by subject, author, and other headings.

"Simulated Frame Vue" by
Morris Paper Mills Division, Chicago,
Federal Paper Board Company, Inc.

They can't knock this pitcher out of the box

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PACKAGE engineering®

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A note from the Publisher

On July 19 the governing board of Michigan State University formally established a School of Packaging in the College of Agriculture. After several years of offering courses in packaging as part of the curriculum in the Department of Forest Products, the move in setting up a separate school recognizes the growing importance of, and need for, education in the packaging field. This culminates over a year of work by a committee chairmanned by R. Bruce Holmgren, editor of PACKAGING ENGINEERING. We, of course, are proud of the fact that our editor played a leading part in the organization of the project.

At the same time a Packaging Foundation is being formed to raise money from industry to build a two million dollar building to house this school. At the time of this writing, the university is looking for an able man to name as executive secretary of the Foundation.

The Foundation will be governed by a five-man board of trustees consisting of two men from industry and three men from the university. The two men from industry are our editor, R. Bruce Holmgren, and Orlin E. Johnson, vice president in charge of production, Bristol Myers Products Div., Bristol Myers Co. The three Michigan State men are Dr. Thomas H. Hamilton, vice president for academic affairs; Philip J. May, comptroller and treasurer, and Dr. A. J. Panshin, head, Dept. for Forest Products.

About all we can add is "Amen."

There are schools of law, medicine, engineering, etc., but until now no university has ever set up a separate school of packaging.

Michigan State first added courses in packaging in the fall of 1952 and now, five years later, the establishing of the nation's first School of Packaging is a milestone in the development of the field.

The package engineering function is one of the last frontiers of substantial savings in the overall manufacturing operation. The more trained men that come into the field, the easier will be your job of turning in a greater profit for your company through better packaging.

The step that Michigan State is taking will bring more trained men into the field, and I think will be the forerunner of a good many Schools of Packaging at other leading universities. The Foundation merits the support of the entire packaging industry.

Angus J. Ray
Publisher

Package Engineering is published monthly by Angus J. Ray Publishing Co., 185 North Wabash Avenue, Chicago 1, Illinois. Angus J. Ray, president; R. B. Holmgren and I. F. Megargee, vice presidents; James G. Culbertson, secretary and Ethyl K. Ray, treasurer. Please address articles for publication and correspondence regarding the editorial content to the editor. Statements and opinions expressed in articles and editorials are those of the respective authors, for which Package Engineering assumes no responsibility. Copyright 1957 by Angus J. Ray Publishing Company. Accepted as controlled circulation publication at Aurora, Illinois. The name Package Engineering is registered in the U. S. Patent Office.

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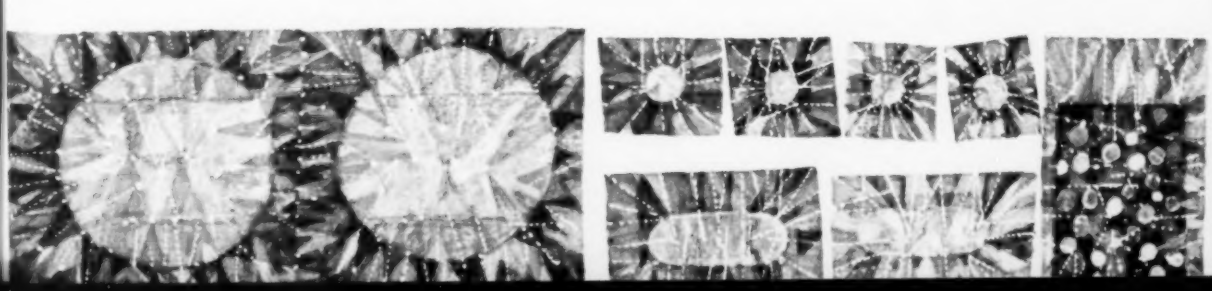
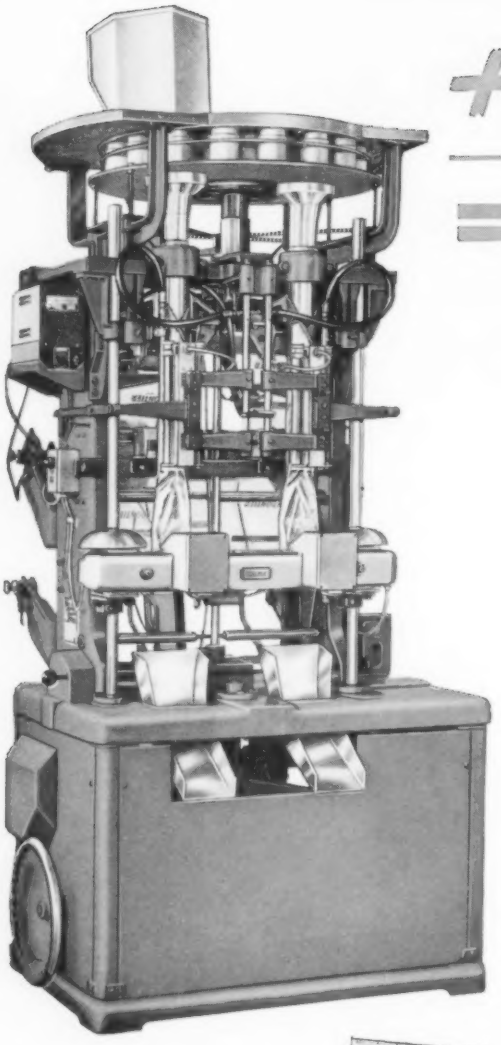
Dobeckmun Metalam® effectively meets the exacting requirements of moisture and light sensitive products such as antibiotics, instant foods and cosmetic lotions. Metalam is a lamination of aluminum foils to plastic films and papers, available plain or colorfully printed to identify, to promote and to attract new customers for your product. This unique Dobeckmun material is proof against moisture, heat and grease, is heat-sealing, nontoxic and durable. It is also economical—performing flawlessly on high speed machines.

From the loading point to the moment of consumer use, your product is packaged for performance by **The Dobeckmun Company,** Cleveland 1, Ohio; Berkeley 10, Calif. Offices in most principal cities.



polyethylene

+ STOKESWRAP



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candy detergents

and many other products

To assure flexible packaging with maximum protection of the contents, STOKESWRAP forms clear or printed polyethylene film into a pillow type package having exceptionally high strength and resistance to rupture. This development makes possible the packaging of products heretofore too heavy to be satisfactorily handled by other materials.

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A wide selection of feeds...pocket, auger, tablet counting, liquid, net-weight scale and special mechanisms . . . make STOKESWRAP well suited for low-cost high-quality polyethylene packaging of a great variety of products.

Positive Seal—No Film Waste

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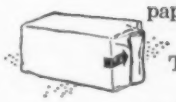
FMC PACKAGING MACHINERY DIVISION

Stokes and Smith Company

4994 SUMMERDALE AVE.
PHILADELPHIA 24, PA.

X-Ray Photograph of actual cracker package

Ever wonder why some crackers taste fresher than others? The X-ray photograph above contains the answer. Inside this box of crackers is an inner bag of wax-laminated Rhinelander Glassine paper. This dense, almost impenetrable paper keeps moisture-vapor from robbing crackers of their crispness.



The inner bag has excellent dead-folding qualities . . . can be opened and positively re-closed many times, protecting cracker crispness to the very last one! Glassine does this job economically—actually at a lower unit cost than most other protective packaging materials. If you have a product requiring a moistureproof package, let us show you how economically Rhinelander Glassine can work for you.

Our packaging engineers can recommend the right protective grade for you. When writing, please state application.

Glassine Greaseproof

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Subsidiary of St. Regis Paper Company

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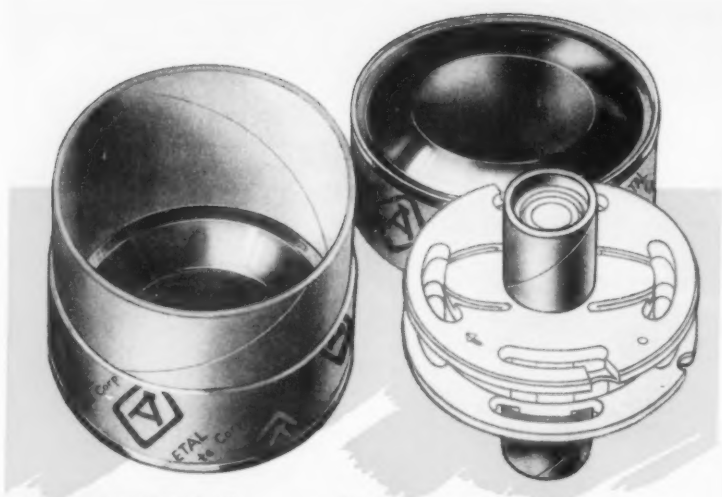


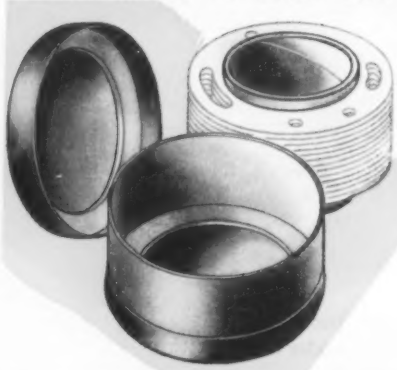
PROTECTION for an intricate part!

Cleveland Containers save you money in packaging large parts as well as smaller items.

Above is a metal end telescope container designed to package a rotary group for a hydraulic oil pump. Both ends of the shaft are further protected with paper tubes.

This style container has many uses for both heavy and light parts.

SHOULDERS to lean on!



Illustrated at the left is an all-paper container with a die cut disc fitted into each of the paper cap ends. This is to accommodate a quantity of thin gaskets assembled over a paper tube for convenience in merchandising and protection in shipping.

Suitable for such items as rubber gaskets, washers, shims, rubber or wire coils.

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Why pay more? For quality products . . . call CLEVELAND!

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Letters to PACKAGE engineering

Gentlemen:

I was greatly interested in reading your editorial in the July issue and want to compliment you on the soundness of the position taken.

Your points closely parallel some similar observations I had occasion to develop in a talk before the Packaging Institute several years ago in a paper entitled "Materials, Specifications, and Testing of Fibreboard Containers." A copy is enclosed and may be of some interest to you.

We are encountering the situation you describe so often. I would like to have permission to reproduce your editorial for distribution to our sales force and company management to make everyone aware of the problem and the sound approach you advocate.

W. B. Lincoln, Jr.
Vice President, Technical Service
Inland Container Corp.
Indianapolis

We are glad to grant you permission to reproduce our editorial and thank you for your kind words about it. The excellent paper you delivered several years ago confirms our judgment that it is a recurring problem.

Gentlemen:

I liked your July editorial very much. You are so right when you state, "Far-sighted management clearly recognizes the distinct value of these visits" . . . Yet even tho they do recognize the value, how few times do they see to it that their container spec writers do take the necessary time off to go to the supplier's plant.

The other day some of us had a rather hectic session discussing the limit of speed . . . in feet per minute . . . of conveyor belts from which

Growing Trend in Food Labeling...

BACK LABELING

Back labeling is rapidly developing into a potent way to merchandise glass-packed foods to the housewife. The additional labels usually carry recipes, helpful suggestions on use, assurances of quality, or cross-product advertising . . . and reports show *strong* sales response, compared to single-label containers.

In order to take advantage of back labeling, Kraft Foods Company has installed a WORLD Super C. M. Labeler — last word in high speed, fully automatic machines. The WORLD Super C. M. is the only labeler that applies front-and-back, or front-and-wrap-around neck labels simultaneously to any size or shape of glass container up to gallon capacity, at speeds up to 320 B.P.M.

Whatever *your* special requirements, there is a type of WORLD Labeler that will give you high quality, low cost labeling. Call on Economic Machinery Company — builders of more labelers than any company in the world — the only company making a complete line.

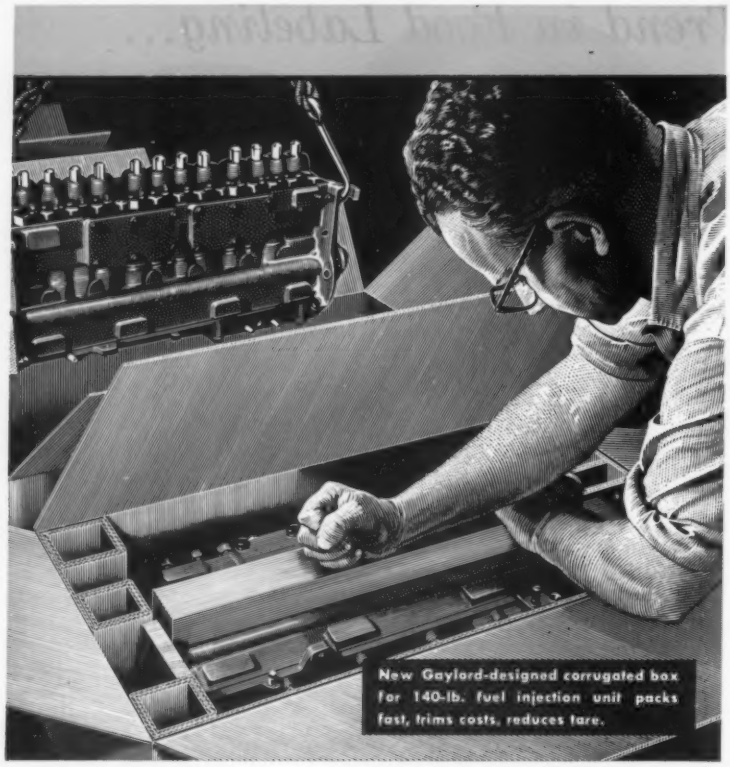
WORLD LABELERS

LABELERS WORLD BANDERS

ECONOMIC MACHINERY COMPANY

60 Fremont Street, Worcester 3, Mass. • Division of Geo. J. Meyer Manufacturing Co.

YOU'VE GOT THE BEST IN THE WORLD



CORRUGATED HANDLES THE HEAVY JOBS

Are you paying more than you should for your packaging? Heavyweight jobs formerly requiring costlier materials are now taken in stride by corrugated boxes. Packaging like this calls for versatile materials, ingenious engineering. Gaylord has done it—time after time.

You can profit from the savings that heavy-duty corrugated boxes can deliver. Call your nearby Gaylord packaging engineer.

Gaylord Boxes

CORRUGATED AND SOLID FIBRE BOXES
FOLDING CARTONS • KRAFT PAPER AND SPECIALTIES
KRAFT BAGS AND SACKS

GAYLORD CONTAINER CORPORATION ★ ST. LOUIS

DIVISION OF CROWN ZELLERBACH CORPORATION

workers (female) are required to pick off products. We could not seem to agree, at all. Wonder if you have any information which you could add, for the benefit of all of us. Perhaps an article about that subject would be worthwhile for one of your future issues.

My own experience is that much higher speeds can be used than most firms do use if the girls are carefully selected. High speeds, with certain types of girls, produce the state where the belts suddenly become stationary and the operator feels that she is moving. That can lead to nausea in certain people. Also the color of the belts and if it is one solid color or a canvas belt (woven) with stripes in it, do have a pronounced effect on the operator.

Joseph F. Reis
President
Reis Associates
Tarrytown

We thank you, too, for your kind words. There is considerable interest in the question of the relationship between the workers on the line and the speed of the line itself. Careful attention to the selection of packaging line attendants is very worthwhile. We direct your attention to an article by H. Geddes Stanway, executive vice president, Skinner Manufacturing Co., entitled "Human relations on the packaging line," which appeared in our April 1957 issue, page 30. We expect to have further editorial material along the lines you indicate.

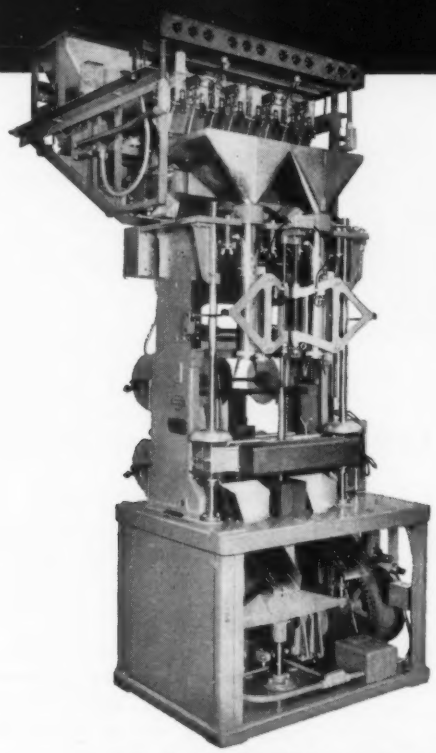
Gentlemen:

The Small Metal Packages Subcommittee of the Petroleum Packaging Committee of Packaging Institute is currently preparing an article for distribution among the membership on the subject of "Can Inspection Procedures." There is much for us to think about in the excellent article "Practical inspection of empty and filled metal cans," starting on page 26 of your July issue.

Would Package Engineering be kind enough to forward tearsheets

Now Model B Transwrap Has

SEVEN NEW DESIGN FEATURES



Model B Transwrap, showing net weight scale feeding.

Filled double-wall Planters Peanut bags, with half-hole punched at top, are produced on a volumetric-feed Model B at 100-a-minute speeds.

Here's more news about Transwrap, the *completely automatic* packaging machine. Now you get 7 new design features in the Model B as the result of Package's continuing engineering research and development program.

- **Conjugate Cam Drive**—assures positive up and down drawbar strokes with a mechanism that cannot get out of adjustment.
- **Die Punch for Half Punch-Out**—provides an interrupted cut, makes partial hole without removing the tab.
- **Cam Switch Box**—with half-speed shaft to incorporate all switches in one box.
- **Dielectric Sealing**—with improved construction for sealing heads.
- **Feed and Scale Pans**—new design for more efficient feeding.
- **Magnetic Scale Switches**—replace open points. Feature positive snap action contacts and contamination-proof construction.
- **Improved Augers**—use various pitches to suit product conditions.

Model B Transwrap will produce filled bags in sizes from ⅞" to 5⅛" wide and 2⅜" to 13" long, handles free-flowing solids, liquids, semi-liquids, granules and fine powders. You can find out about all these new Transwrap features by contacting our nearest office today.

PACKAGE MACHINERY COMPANY

EAST LONGMEADOW, MASSACHUSETTS

NEW YORK • PHILADELPHIA • BOSTON • CLEVELAND • CHICAGO • ATLANTA
DALLAS • DENVER • LOS ANGELES • SAN FRANCISCO • SEATTLE • TORONTO

These outserts were applied quickly, accurately, and at low cost with the new Pfaudler Outsert Applicator.

Something new, something important, something extra, something free . . .

That's what an outsert says as it helps you sell

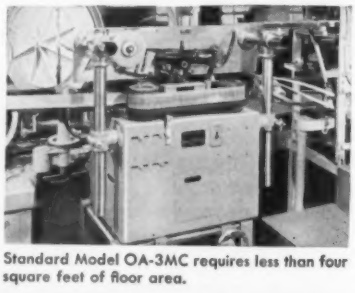
You can add a whole new dimension to your merchandising simply by posting an *outsert* on your package.

Coupons, recipes, other descriptions of product use, contest rules, news of price reductions, physicians' literature or dozens of other sales aids can make your product stand out from competitive packages on the shelf . . . *when they are put where the buyer can see them.*

New machine outserts quickly, cheaply

The new Pfaudler Outsert Applicator gives you: *Fast, continuous production;* up to 220 cylindrical packages per minute. Also handles rectangular, tapered or flat-sided containers. *On-the-spot-application;* outserts go exactly where you want them, held secure with pressure-sensitive tape. *Low-cost application;* requires only occasional inspection, works inline.

Whenever you look for a new sales idea, consider outserts. They're effective, cost little, and can now be applied on a production basis. Bulletin No. 933 gives the details; write for a copy.



Standard Model OA-3MC requires less than four square feet of floor area.

THE PFAUDLER CO.
Dept. PAE-97
ROCHESTER 3, N.Y.

of this article to each member of our Subcommittee listed below?

F. Norton Landon
Chairman, Small Metal Packages Subcommittee
c/o Sun Oil Company
Philadelphia

Tearsheets have been mailed to those committee members as requested. It is gratifying to know that articles such as that are proving helpful to you and your members.

Gentlemen:

Do you have information on how to make up good specifications?

Edward F. Oppasser
Purchasing Agent
John Sunshine Chemical Co., Inc.
Chicago

Gentlemen:

Have you any samples of a good specification for corrugated cartons, folding boxes, etc.

Louis P. Gervasi
Packaging Engineer
United States Rubber Co.
Passaic

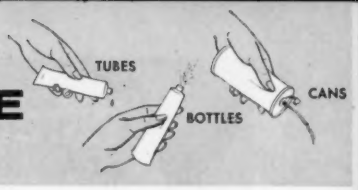
We are now developing some editorial material geared to meet your needs. We are keenly aware of the need for carefully prepared spec's and look forward to having some good specimens for you.

Our editors welcome your views, comments, and queries. Please address your letters to us at Package Engineering, 185 North Wabash Avenue, Chicago 1, Illinois. Our telephone number is FInancial 6-1440.

For more information circle No. 211 on Reader Service Card ↑
For more information circle No. 212 →

NO. 2 OF A SERIES

Bracon | SQUEEZE-TO-USE PACKAGING



How to plan for filling and sealing your Bracon polyethylene tubes...bottles...cans

Polyethylene Heat Sealing

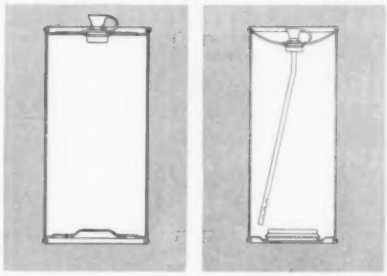
The technique for heat sealing Bracon tubes and bottles is fast, clean and produces a weld as strong as the sidewalls of the container itself. Briefly stated, the area to be heat sealed is first exposed to radiant heat until the polyethylene has reached the proper temperature. The molten polyethylene is then cooled very quickly by contact with water-cooled metal jaws, essentially remolding the polyethylene. Since hot metal does not come in contact with the polyethylene there can be no objectionable sticking or gumming of the mechanism regardless of the length of the production run.

Tube Filling and Sealing

BRACON tubes to be filled and sealed are inverted and placed with the open end up in holders which are adjustable for the various lengths of tubes available. Most standard tube filling mechanisms can be used; most automatic machines utilize diving nozzles. After the tubes are filled, two holding jaws close the tube leaving between 1/8" and 3/16" of polyethylene above the jaws. Radiant heat is then applied to this exposed portion until a molten bead is formed. Finally, two water cooled crimping jaws close just above the holding jaws (which hold the tube closed during the entire operation), remolding the polyethylene and making a fusion-type welded closing.

Bottle Filling and Sealing

Basically the same heat sealing method is used for BRACON bottles. The empty bottles are held inverted in metal holders so that about 1/8" of each bottle bottom protrudes above its holder. Filling is done through the open bottom while the bottles are seated in these holders. Bottles can be filled by most conventional methods. After filling, specially molded polyethylene discs are then positioned over the open end. These discs are the bottle bottoms and are shaped much like a very shallow cup with the flange or lip slightly larger in diameter than the bottle. The filled bottle, with disc in place, is then rotated under radiant heat until the flange of the disc and the bottom of the bottle itself are heated to the proper temperature. A water-cooled metal patter presses the heated polyethylene of the two parts together to complete the sealing process.



Production Filling for the BRACON Squeeze Can

The BRACON squeeze-can is supplied with metal tops and bottoms seamed to the polyethylene side walls.

Liquid filling is done through the orifice in the metal top on either standard gravity or pressure type equipment. The orifice in the metal top is 9/16" diameter, the same size as the neck opening in the all-metal detergent can. The second and final step is the insertion of the polyethylene dispenser plug. These plugs are supplied already closed. They are positioned over the orifice of the metal top and then seated by a light impact blow. Various semi-automatic devices have been used most successfully for this operation and a fully automatic machine capable of handling 200 containers per minute is now in the final stages of construction.

The BRACON squeeze duster for powders is designed with concave metal top so that the dispensing plug is recessed and the top of the cap is flush with the chimes. The metal bottom plate has a filling orifice of 1-9/16" diameter which is covered by a polyethylene snap-fit plug after filling. Any standard powder filler can be used with the squeeze-can riding to and from the filler in an inverted position. The bottom plug is then positioned over the orifice and snapped, by direct downward pressure, into position. Consumers can be instructed how to pry off the bottom plug if the package is marketed as a refillable container. Squeeze-cans for powders are shipped with dispensing plug and feed tubing assembled in position.

A typical "contract-packer's" production line for filling and sealing BRACON tubes.

Available Machinery

Bradley Container Corporation neither manufactures nor sells filling and sealing machines. However, close cooperation between machinery manufacturers and Bradley ensures that BRACON customers will be able to equip their plants with production equipment that is best suited to their particular need.

A variety of filling and sealing machines for tubes and bottles are available, including laboratory models, semi-automatic and fully automatic production models. Prices range from inexpensive to relatively higher priced units and production rates run as low as 2 units per minute for laboratory work to nearly 200 units per minute for large scale production.

COMPANY	TUBES	BOTTLES	SEMI-AUTO.	FULLY AUTO.
A & M TOOL & DIE CO. Southbridge, Mass.	X		X	X
CARBERT MFG. CO. Moody St. Waltham, Mass.	X	X	X	X
HARING EQUIPMENT (Kalix Dupuy Machine) 293 Frelinghuysen Newark, New Jersey	X		X	X
HORIX MFG. CO. 2609 Chartiers Ave. Pittsburgh, Pa.		X	X	X

There are several other machines, now in advance stages by other package machinery firms ... Included are conversion components for existing equipment and higher speed, fully automatic machines.

Bradley Container's Technical Service Department will assist the customer's engineering staff in evaluating equipment and refer specific requirements to the machinery manufacturer.

BRADLEY CONTAINER CORPORATION

A subsidiary of American Can Company

MAYNARD, MASSACHUSETTS

New York • Chicago • Los Angeles • Toronto

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A SWIFT'S ADHESIVE PLANT IS NEARBY

A typical modern Swift Adhesives manufacturing plant. This attractive, efficient plant is located in Atlanta, Ga.

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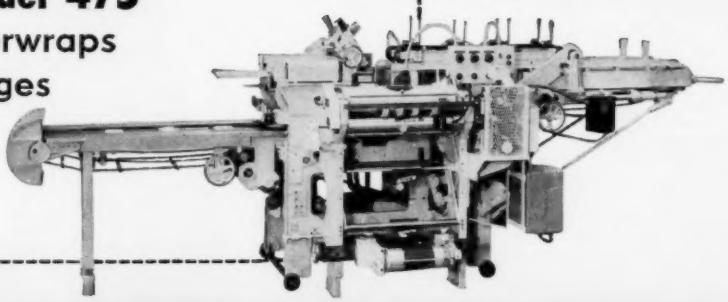
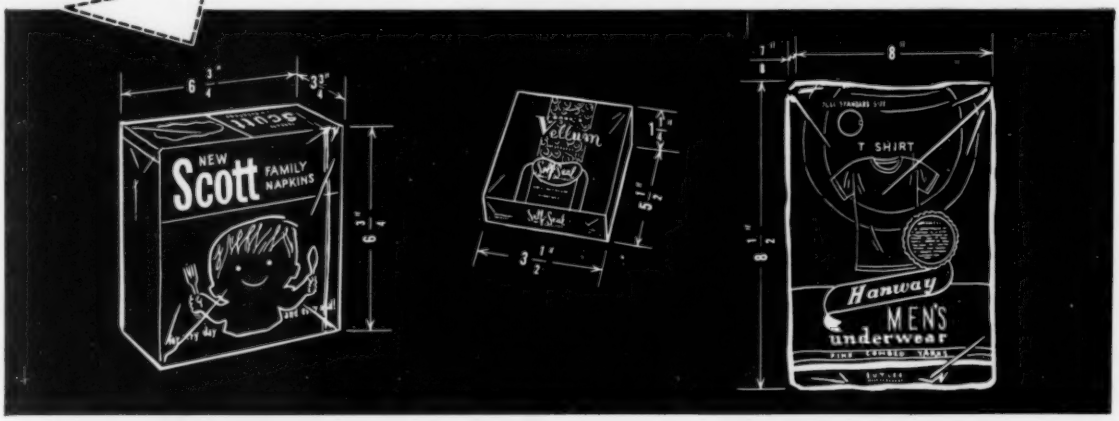
To Serve Your Industry Better with these Adhesive Products

Resins and Rubbers in Emulsion or Solvent
Dry, Liquid and Flexible Animal Glues
Liquid Dextrin Adhesives

This Battle Creek Packaging Machine Model 47S

has handled overwraps within these ranges at speeds up to 70 packages per minute





to produce packages like these

Scott Family Napkins Packaged for Impulse Sales

Gages Vellum Stationery is Carefully Handled by the "Continuous Flow" Process

Colorful, Protected Package of Hanways Men's Underwear

SPECIFICATIONS

Model 47S–Versatile, low-cost packaging can be yours with this most flexible of Battle Creek *"Continuous Flow"* machines. The Model 47S attractively underwraps paper napkins, a variety of textile packages, envelopes, flat stationery and odd shaped paper specialties including combinations of envelopes and flat stationery in unit packages. The smooth *"Continuous Flow"* process eliminates distortion and creates a neat, tight wrap on every product . . . assuring maximum impulse sales and fast product turnover. Handles self-sealing cellophane, wax-coated paper and laminated foil in economical roll form within package size lengths of 4" to 12", widths of 2¾" to 8" and heights of ½" to 4½". Speeds range from 40 to 70 packages per minute, and conversion time averages out to 10 or 15 minutes.

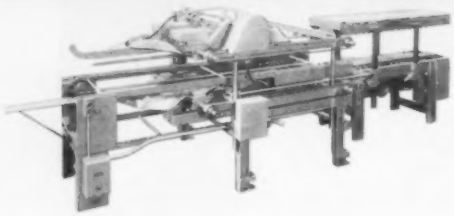
Call on Battle Creek Packaging Machines today for quick, complete service on all your packaging problems.

"Continuous Flow" Packaging

BATTLE CREEK
packaging machines, inc.

100 TWELFTH STREET, BATTLE CREEK, MICHIGAN

Behind the times with an outmoded packaging line?



PACKOMATIC MODEL "G" CASE GLUER-SEALER

The *first* choice of manufacturers with a case-sealing problem—the Model "G". This "little giant" requires only a minimum of floor space to do a high-speed job of gluing and sealing corrugated shipping containers automatically. Adjustable to a wide range of case sizes, the Model "G" is rugged, precision-built, safety-equipped. It has a minimum of moving parts for virtually maintenance-free operation. Start your case-line off right—with a Model "G"—only one operator required to feed loaded containers.

'gluing unit overall length 9'-5"
compression unit overall length 6'-0"

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PACKOMATIC machines include the Bale Sealer — Case Sealers — Opener-Loaders — Case Imprinters — Telescoping Volumetric Filler — Packer-Gluers. Units available, semi-automatic or fully-automatic depending on your needs.

Packomatic

T.M. Reg. U. S. Pat. Off.

equipment feeds, forms, positions, loads, seals, and imprints shipping containers automatically

Hand-forming, loading and sealing is out-of step with today's competitive markets. Trim your costs with Packomatic Custom-Engineered equipment—capable of automatically forming "knocked-down" corrugated containers, loading them in the variety of patterns shown below, sealing and imprinting cases, ready for shipment. Packomatic machines do the whole job—or any part of it—and at speeds to match your production requirements. Regular Packomatic equipment, available semi or fully-automatic, may be added to complement existing packaging facilities. Begin building for complete package automation now. Let one of our sales engineers suggest the start of a long-range program for your plant. Regardless of budget, look to Packomatic for the answer.

Six 5-qt. cans or gallon cans in 20⅞" x 13⅜" x 9 3/16" case and 20¼" x 13¾" x 8¼" case

Twelve 46 oz. cans in 21" x 13" x 7⅛" case

Twenty-four cartons in 12½" x 10⅝" x 8½" case

Eighteen 7 & 8 oz. cartons in 20" x 14⅞" x 8⅝" case

Sixty cigarette cartons
King Size: 17⅞" x 11½" x 22"
Regular: 14 3/16" x 11½" x 22"

TYPICAL CASE LOADING PATTERNS FOR CANS AND CARTONS

Twenty-four 12 oz. cans in 16⅜" x 10 5/16" x 5 5/16" case

Six No. 10 cans in 22 1/16" x 17⅜" x 7⅛" case

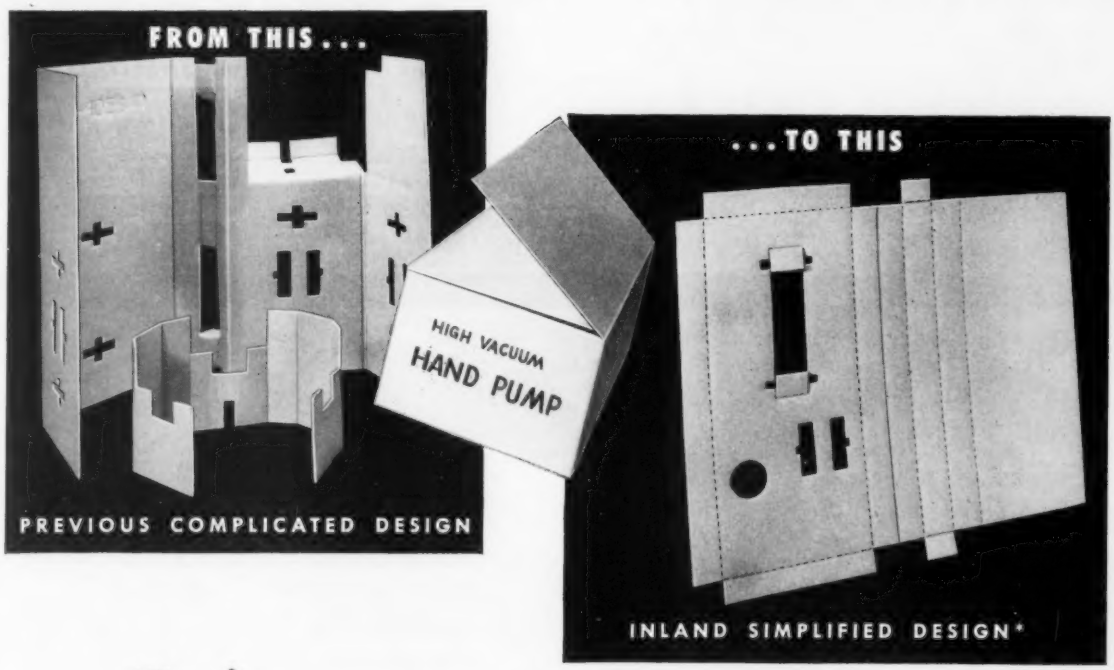
Thirty 1 lb. cartons in 16⅛" x 10 9/16" x 7¼" case

Twenty-four cartons in 19½" x 10⅞" x 7" case

Forty-eight cartons in 22¾" x 23½" x 15⅞" case

← For m

HOW *Inland* DESIGN LEADERSHIP SAVES YOU MONEY



*Result: 30% Reduction in Packaging Labor Cost for this Inland Customer

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REG. U. S. PAT. OFF. PLAX CORP. LICENSED TO MONSANTO CHEM. CO.

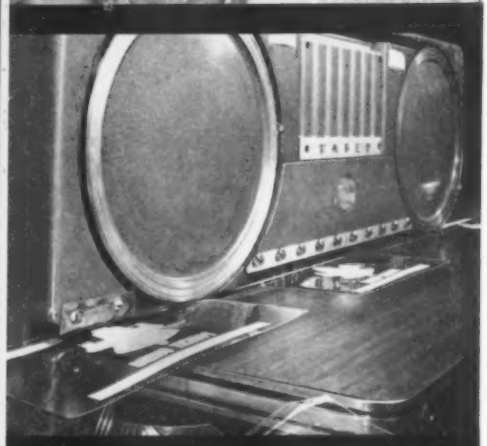
STYRENE FILM AND SHEETING

MADE OF MONSANTO LUSTREX Styrene Plastic

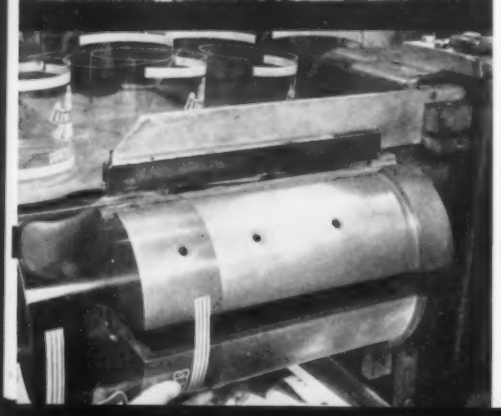
DISTRIBUTED IN U. S. BY MONSANTO

LUSTREX: REG. T.M. MONSANTO CHEM. CO.

Polyflex 100 can be ***CREASED,*** *folded, blanked, slit, sheeted, cut-to-size . . .*



BEADED, *embossed, riveted, drilled, punched . . .*



HEAT SEALED, *laminated, cemented, stitched*

...easy to fabricate

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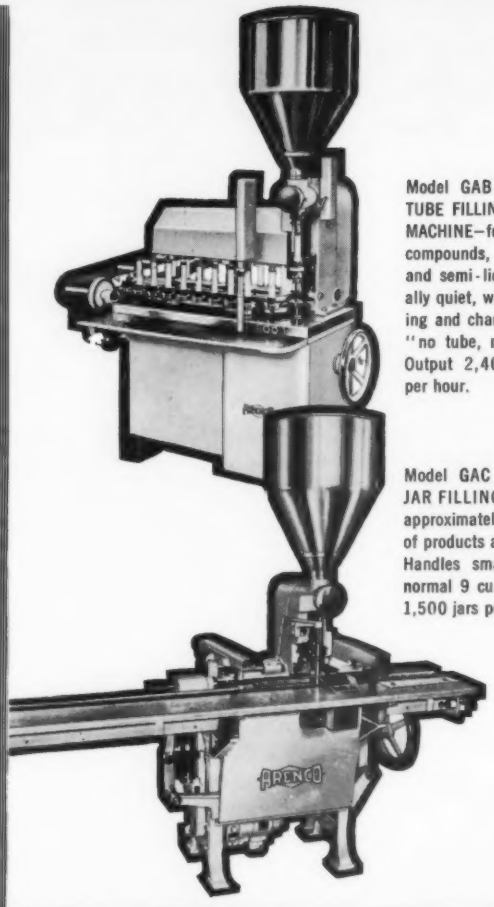
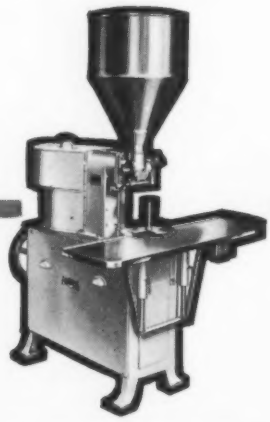


Model GAB Fully Automatic TUBE FILLING AND CLOSING MACHINE—for packaging thick compounds, creams, liquids and semi-liquids. Exceptionally quiet, with easiest cleaning and changeover, includes "no tube, no fill" features. Output 2,400-3,000 tubes per hour.

Model GAC Semi-Automatic JAR FILLING MACHINE. For approximately the same kind of products as the tube filler. Handles smaller jars up to normal 9 cu. in., at 1,200-1,500 jars per hour.

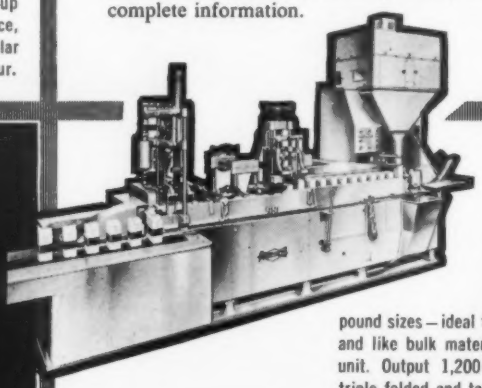


Model GAM BOTTLE OR JAR FILLING MACHINE. For up to 1 quart sizes. Suitable for marmalade, apple sauce, mayonnaise, mustard, paint, varnish, oil and similar products. Output 1,200-1,500 containers per hour.

It means painstaking engineering, the use of finer materials . . . always more rigid quality control. That policy has proved successful because users know and appreciate the extra value that Arenco filling and sealing equipment provides.

It costs no more to specify Arenco – it does mean a finer, more reliable piece of equipment.

We'll be pleased to tell you about our complete line– and help solve any filling problem you may have. Write today for complete information.



Model VUV Fully Automatic BAG FILLING AND SEALING MACHINE. For SOS bags – ½ to 5-pound sizes – ideal for coffee, flour, cereals and like bulk materials. Includes weighing unit. Output 1,200-2,000 bags per hour, triple folded and tape sealed.

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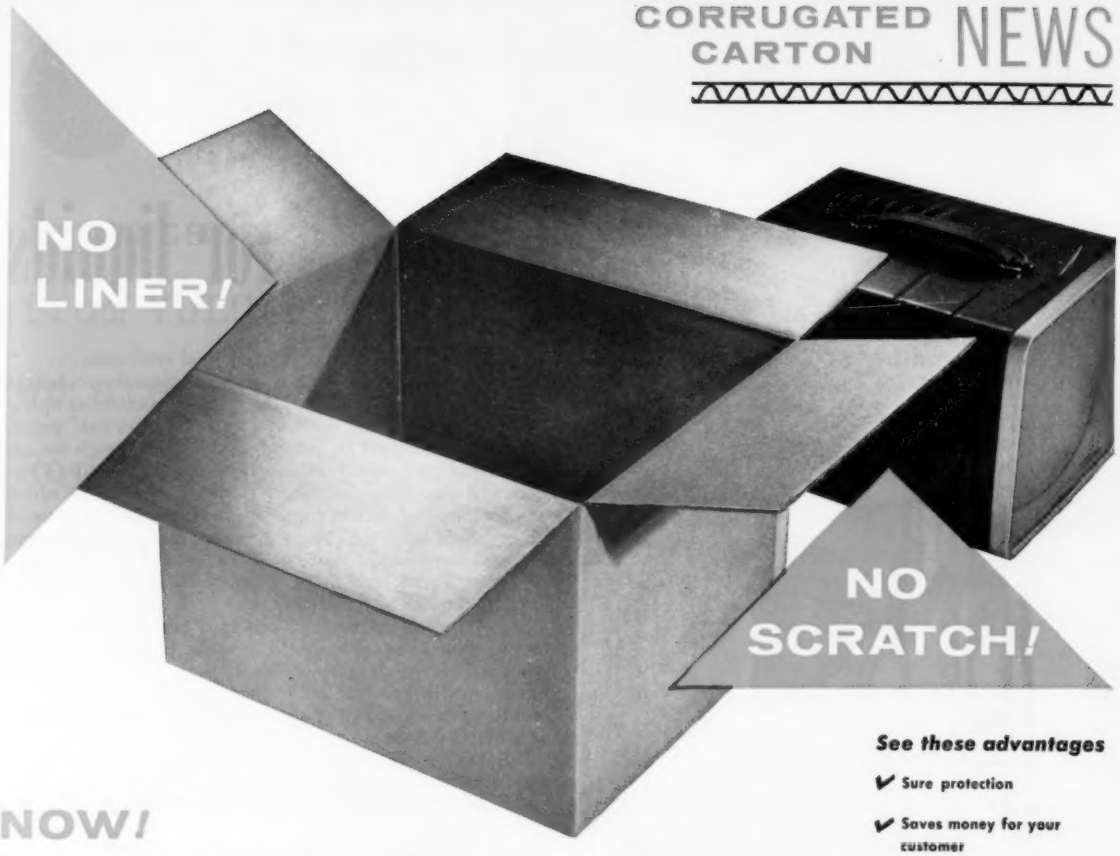

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New A-C Polyethylene Coating ELIMINATES NEED FOR LINERS

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new polyethylene-coated container

Saves 50% on packaging costs for liquids

The new "Tetra Pak" container offers dual economies . . .

First, the packaging process is simple because the containers are simultaneously formed and filled in one continuous operation, using large rolls of specially prepared "Tetra Pak" paper.

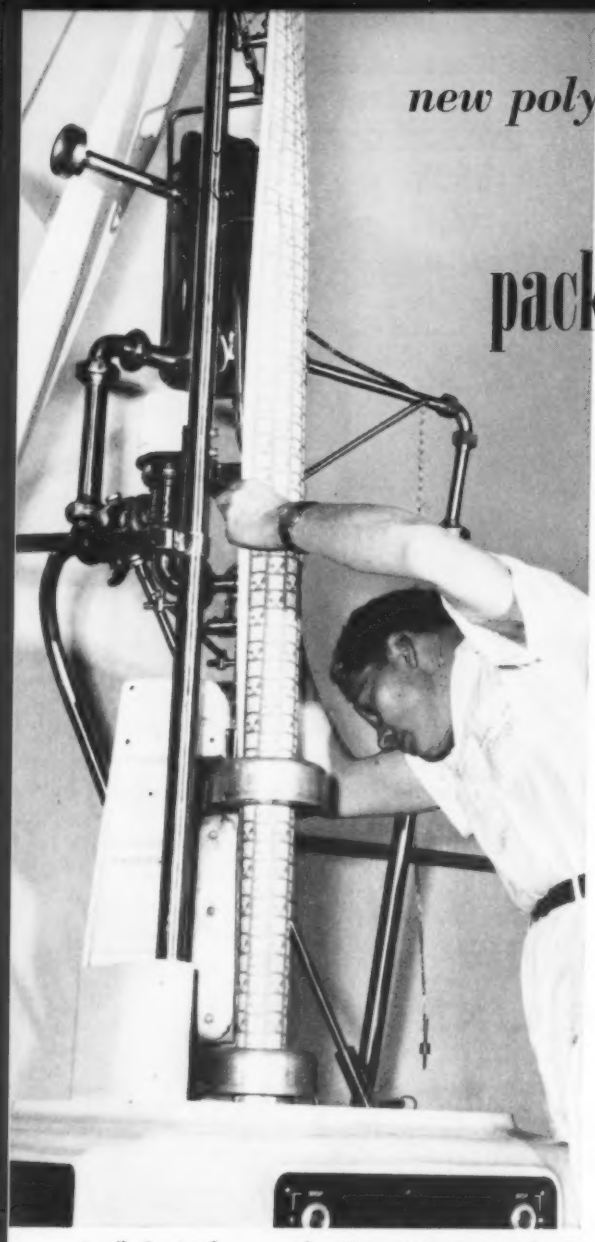
Second, paper costs are cut almost one-half through the use of a coating specially formulated from BAKELITE Brand Polyethylene Resins. Crown Zellerbach Corporation states the added strength imparted by the polyethylene coating permits use of lighter weight stock than for conventional cartons. The coating also provides a positive seal.

To open, merely tear off any one of the four corners. To close, simply fold back the opened corner.

The "Tetra Pak" container is one more example of the many ways by which BAKELITE Resins serve the dairy industry. The resins include vinyls, polyethylenes, phenolics, epoxies, and styrene and vinyl acetate latices. Some are specially formulated for coatings used directly on packages and containers, others for protective finishes applied to processing equipment.

The actual coatings are supplied by formulators who employ these BAKELITE Resins for the wide variety of finishes available.

For names of these coating specialists, write Dept. ZD-157.



A roll of printed paper with coating based on BAKELITE Polyethylene is fed into this machine, heat-sealed at the base, filled with milk, cream or other liquid, then sealed into its four-sided shape . . . ready for market all in one continuous operation.

Shown is the "TEE-PEE" milk package marketed by Sunrise Dairies, Hillside, N. J. **Crown Zellerbach Corporation,** San Francisco, Calif., manufactures the coated rolls of paper, and provides technical assistance on the machinery used in this new packaging process.

IT PAYS TO PACKAGE IN MATERIALS MADE WITH

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We are now making drums
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to our complete line of
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INDUSTRIAL AND HOUSEHOLD cements—adhesives—compounds—greases—paints—fillers—food pastes, syrups, and creams.

TO FIND THE ONE RIGHT TUBE FOR YOUR PRODUCT

Send Us Your Product . . . . . .
. . . . . to assure compatibility of product with tube metals and tube linings and caps, our research staff assists Sheffield customers in selection of the one right tube for your product, by actually filling and testing the product in the recommended container.

The Sheffield Process . . . . . .
. . . . . an exclusive method of manufacturing collapsible metal tubes—is the result of four generations of study, research and manufacture which assures you safe, economical, highest quality tubes.

The Sheffield Technically Trained Representative . . . . . .
. . . . . will gladly explain how Sheffield technical superiority can insure the efficient and dramatic packaging of your product. He is more than just a salesman: he is a technician highly trained in the science of collapsible metal tube packaging.

For full information on Sheffield Tubes, write for our free brochure . . . no obligation, of course!

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New England SHEFFIELD PROCESS TUBES

Robert E. Sueter has been with the Mennen Company 23 years. He started on the production lines and worked through a sequence of positions prior to attaining his present post. He has attended Rutgers University, is a member of Packaging Institute, the Morristown Industrial League, and participates in organizations of which The Mennen Company is a member, such as American Management Association.

John D. Henze is a graduate of the University of Alabama, with a B.S. degree in industrial engineering. He has taken graduate work there and has studied electrical engineering at Newark College of Engineering. Prior to joining Mennen, he was associated with Western Electric Company in management auditing, with Clifton Cox Company, a consulting organization, and Thomas Edison, Inc.

The Mennen Company developed a way to fill viscous products at relatively high speeds without getting air bubbles in the filled containers. This singularly detailed article tells how Mennen's engineering and production experts solved their difficulties. It explains the intricacies of their use of air pressure and its control. Of special interest are their practical operating procedures, details of equipment use, and their comments in regard to functional hazards arising during operation.

Pressure filling of viscous products

By Robert E. Sueter,
Production Manager,
and John D. Henze,
Plant Engineer,
The Mennen Company,
Morristown, New Jersey

Mennen problems in the filling of viscous products came into sharp focus when it was found that the turbulence created by the vacuum during the fill was resulting in small air bubbles through the completely filled containers. The particular products involved have viscosities ranging from 12,000 to 15,000 centipoises at 25 degrees centigrade. This bubbling action had to be eliminated and we wanted to maintain a satisfactory rate of speed in the filling operation.

A closed pressure system method is now being used and we have converted one of our fillers from vacuum to gravity. The essence of the solution is that we are controlling the material pressure used in connection with the delivery and movement of product to the filling machine.

An early phase of our project was to convert an MRM 30-head vacuum filler to a gravity type machine. We installed 30 gravity nozzles. Initial efforts following this included installation of a simple pressure sensitive regulator and a pump. Our basic idea was to have an air-controlled valve to regulate the material flow with the pumping action. The purpose was to provide an intermittent pumping action to move the product from its surge tank on our manufacturing floor (above the packaging floor) into the supply line leading to the filler itself, and the valve control of the total material flow rate.

Need Reset Action

We soon found that we did not get the necessary reset action for the stopping and starting of our filler. In other words, the original regulator tried was not suited to the intermittent motion characteristic of a packaging line. So we installed a reset device utilizing an air (force) balance in connection with the pressure regulator. This device provided the necessary reset action and furnished the feedback to the system which caused it to provide the undamped oscillations necessary to control the valve.

It was found we had caused a turbulent flow at the nozzle orifice. As a result, the nozzle was redesigned

in order to maintain a laminar flow. This gave us a product movement not exceeding the initial Reynolds number, i.e., the criterion of flow.

Getting Flow Control

There is now a characterized flow control valve which provides a direct proportion of flow in proportion to the applied air pressure. There is almost a linear relationship between flow of product and the pressure drop across the valve. However, when the reset action is taking place, the relationship is not linear. Ultimately we hope to attain a linear relationship on the pumping action which takes place on the floor above our packaging floor, i.e., on the manufacturing floor where the tank is located. In short, there is a pressure switch on the pump outlet line. This regulates the pump so that there is adequate material for the filling of bottles.

The regulator also automatically starts and stops the pump whenever the required pressure drops or when the pressure is sufficient for our operation. Typically it has a starting point of 8 lbs. and a stopping point of 18 lbs. As soon as the line pressure drops to 8 lbs., our pump starts. It then pumps until an 18 lb. head develops.

In describing the arrangement of our system, we shall start for convenience with the delivery of air into the machinery. Thus, our air supply line brings air to the equipment. An air regulator determines by a setting on this regulator the required amount of air necessary to an efficient operation.

Details Of Solenoids

The next feature of the installation is an electrical solenoid valve. This operates manually or automatically with the start and stop button of the machine itelf. When the machine starts, the solenoid automatically opens and allows air to be passed on to the other instrumentation of the line.

The hand on-or-off switch can be used to check the operation of the machine manually. This will open the air solenoid. Another key feature is a line which serves only to blow out any material that is in the pressure chamber and control line. Reason for this is that any material in there will clog the control line, so it is necessary to have a means of blowing it free. There is a blow-down valve that should be opened to allow any such excess material clogging the line to be blown out.

There is a pressure chamber in the system. For all practical purposes this is simply an air reservoir or cushion. It is used along with the sensing device, the Leslie valve.

Feeding into the pressure chamber is a pressure sensing line. This carries the pressure created in the material flow column through the pressure sensing line to activate the pilot control valve box. This control box indicates to the valve whether to open or close as the demand for material or product requires, or as the product viscosity varies.

Function Of Gauges

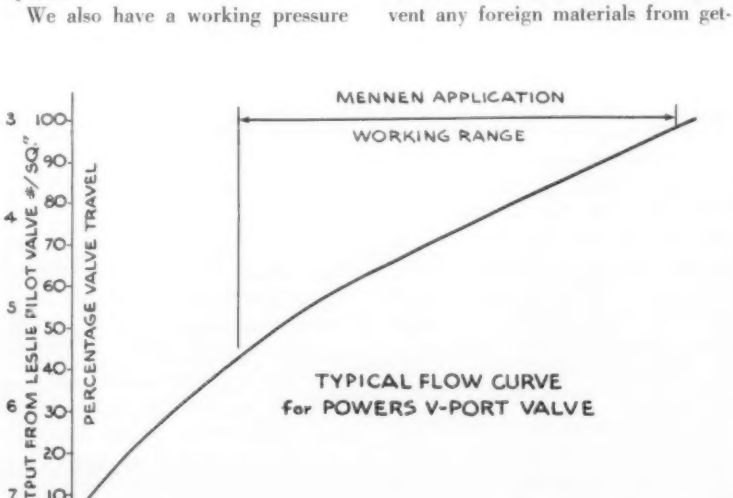
A line supply gauge indicates the air pressure necessary to perform a satisfactory function of the pilot valve. A setting has been established which serves as a guide to those supervising the operation. The arrow on the gauge must indicate this air pressure at all times for a satisfactory operation.

We also have a working pressure gauge. This is the indicated gauge for setting the control of the valve to open or close as required by the material pressure demand. This relates to the material control valve, which is a metering valve that opens or closes as the demand for material necessitates.

To open or close the pilot valve, a spanner nut adjustment is provided. This is turned down to increase the air signal or turned up to reduce the air signal to the material control valve. Our people use exceptional care in making any adjustment of these spanners. After adjusting, they must be careful to lock the spanners together.

A line pressure gauge indicates the number of pounds the line is developing to fill the containers efficiently. Our people are warned that at no time should this gauge indicate beyond 4 lbs. unless something is wrong with the working pressure gauge or if there is excessive running of the pump on the manufacturing floor. Should this gauge indicate in any way that something is functioning improperly, the attendants stop the machine and check it completely before making any adjustments.

Located just before the position of the Powers air valve and ahead of the line pressure gauge itself, a line strainer has been installed to prevent any foreign materials from get-



Here is a typical flow curve for a Powers V-port valve, as used in this operation. Note that the graph shows the percentage of valve travel and the percentage of maximum flow.

ting into our product during the filling operation. Our people check daily for the cleanliness of the strainer.

Metering Of Product

The Powers valve is simply the metering valve that opens or closes as the demand for material requires. Its operation is caused by the increase or decrease of pressure in the supply line to the machine. Whenever the pilot output air gauge shows 10 lbs., our people know that it indicates material is not being delivered from the pump or the surge tank. Ordinarily this condition corrects itself and when this correction takes place, the pressure control valve should return to its normal setting without any adjustments of it being made.

Turning to the movement of air leading into the Powers valve, there is a line pressure control valve (pilot valve) that supplies air to the diaphragm on top of the control valve. This indicates to the valve what should be done, such as indicating whether it should open or close. This line determines this automatically.

If the pressure control line is clogged, the line pressure control valve will not remind the valve. It then becomes necessary for the blow-down valve to be opened and the line operating in connection with it being also opened in order to allow air to purge the system. After this takes place, these valves are closed so that normal operation may resume.

The system focuses on having a Powers Flowrite air-operated control valve in the main supply line coming from the Moyno pump and having its variably controlled speed tied in between the outlet of the surge tank and the filling machine itself.

Sensing Valve Important

As suggested above, in order to accomplish the control of the Powers valve, we used the Leslie pilot valve to have a sensing action controlled by air pressure utilizing our main house air line. The important point is that in order to attain a satisfactory filling of such viscous products as the materials going through this machine, we are controlling not the product itself, but the air pressure used in connection with it.

The viscosity of the material determines the pressure required at the filler control. There is a linear relationship in the control valve, and the fill takes place automatically as the viscosity changes.

In connection with this, in the main line on the manufacturing floor we have a pressure control regulator. It is tied in to the operating motor of the Moyno pump, as shown on the accompanying diagram and as explained above.

The whole project is geared to meet the needs of the intermittent action entailed in the filling operation. The pressure control switch in the line determines the line pressure, hence the need for material. If the pressure in the line drops, the pump starts. As the pressure builds up, the pump stops.

Operating Procedures

Another phase of our development of this system has been the development of a definite operating procedure to use along with it. The following summary of our operating procedure reviewed in connection with the description stated above and portrayed on the diagram should clarify the over-all operation.

Those in charge of the filling operation must check the manufacturing personnel (on the floor above) to open all necessary valves on the surge and manifold pipe line. They must also turn on the electrical main switch and set the control on the side of the pump to automatic operation.

We then have them remove the line strainer in the supply line and wash and replace it.

They next fill the machine with empty bottles and stop it with these empty bottles under the filling nozzles. Then they open the supply line valves.

Next procedure is to blow out excess material in the pressure chamber and pressure control line. Opening the valves necessary to do this, they allow air to purge the system until the air blowing through the blow-down valve is completely free of material. They then close the hand-operated blow-down line and the blow-down valve. These valves are normally closed except when purging the system. The electrical solenoid valve is always open. Similarly, the valve at the pressure chamber always remains closed.

Get Proper Settings

Another important point is to set the air regulator to 20 lbs., air pressure on the line regulator. The hand on-or-off switch is turned or left at the "on" position and the line supply gauge is checked for the proper location of the arrow. If it does not line up at the proper mark, the crew members must reset the air supply regulator valve so that the arrow on the line supply gauge moves to its correct mark.

While the bottles are filling, they check the working pressure gauge. Its arrow should fall within a predetermined range of setting. If it goes beyond a given mark without an adjustment, the crew knows that material is not being supplied by the pump.

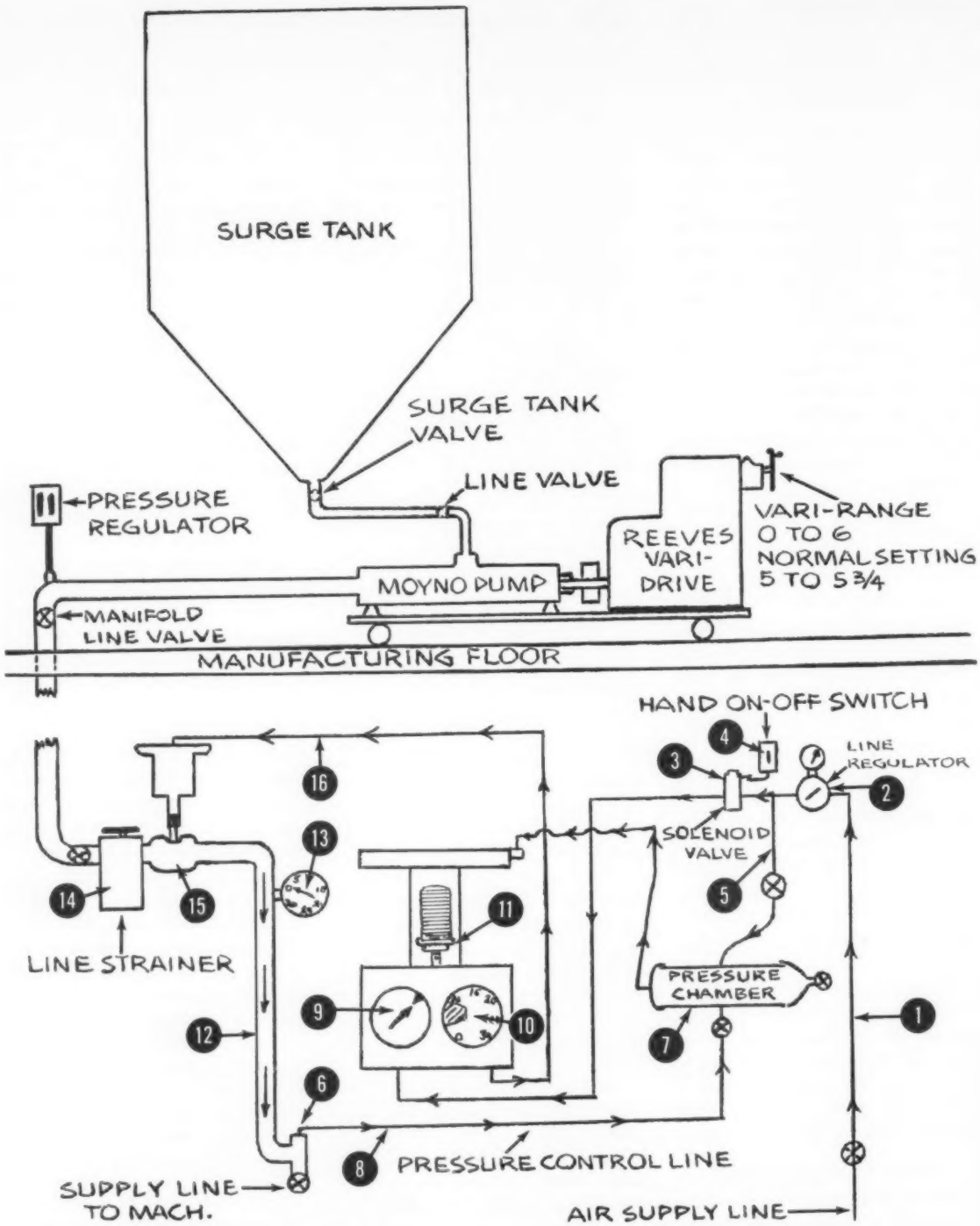
They must next check the surge tank to be sure the tank is not empty. Also they must check the speed of the pump to be sure that it is set at 5 to 5¾ on the Reeves Vari-Drive.

Assuming the gauge does not climb to 4 lbs., an adjustment of the spanner nuts on the Leslie pilot valve is necessary. The crew members turn the spanner nuts down to increase the gauge reading and they must be extremely cautious in making this, because the adjustment is very sensitive. As suggested above, they lock the spanner nuts together after making the adjustment.

Now they turn off the hand electrical switch and the machine is ready for automatic operation.

Some Functional Hazards

As our plant accumulated experience in the operation of this equipment, we found certain functional hazards arising. Since these appeared to be of a few general types, we have been able to develop specific suggestions for our crews to



Here are the components of this pressure filling system, together with their relationships. The numbers below refer to the numbers circled on the drawing identifying each component: **(1)** Air supply line; **(2)** air supply regulator valve; **(3)** electrical solenoid valve; **(4)** hand on or off electric switch; **(5)** hand operated blow down line; **(6)** blow down valve; **(7)** pressure chamber; **(8)** pressure sensing line; **(9)** line supply gauge; **(10)** working pressure gauge; **(11)** spanner nut adjustment rings; **(12)** line supply to machine; **(13)** line pressure gauge; **(14)** line strainer; **(15)** line pressure control valve, and **(16)** line pressure control valve supply line. As shown above, the packaging floor is just below the manufacturing floor where the production takes place and where the surge tank is located. Production then goes through the floor opening as shown to reach the packaging operation.

(Continued on Page 57)

Robert S. Davidson is a graduate of the University of Oklahoma with a Bachelor of Science degree in chemical engineering. Prior to joining Reynolds Metals in 1951, he was associated with Skelly Oil Company. His work with Reynolds as a chemical engineer ranges from electroplating of aluminum to formulation of inks and coatings. His present responsibility is the development and evaluation of foil printing inks.

Even with the special problems involved in the rub testing of printed foil labels, much interest has focused on the use of the Sutherland ink rub tester for this purpose. In this article Mr. Davidson discusses the use of this equipment for such testing, reviews some of the results attained, and outlines the place of such testing in the packaging development process. His attention to the defining of an abrading medium and the end-point is of special interest — emphasizing the problems involved in scuff testing of foil labels.

Evaluating the Sutherland ink rub test on printed foil labels

By Robert S. Davidson,
Research and Development Laboratory,
Reynolds Metals Company,
Richmond, Virginia

When the Rotogravure Foil Label Manufacturers Association adopted the Sutherland ink rub tester as its standard test instrument in 1955, the majority of the foil converting industry knew little of the performance characteristics of this particular instrument. Scuff tests of various kinds had been practiced for many years, ranging from a determined rubbing with a pencil eraser to the more refined Taber abraser test, but no single method had produced the quantitative results which were desired.

Consequently, the advent of a new test instrument kindled the interest of the foil printing industry and evaluations of the Sutherland rub tester were begun. During the initial testing of the instrument there was some indication that the rubbing cycle of the Sutherland rub tester would approximate the scuffing action to which foil labels are usually subjected during shipping and handling.

It was hoped that through the use of the Sutherland unit a closer correlation between laboratory testing and actual shipping tests could be established. Unfortunately, too much was expected of this test method. It has not proved to be the precision test that it was hoped to be.

Limitations Of Test

The plain fact of the matter is that when a scuff test is performed on a printed foil label, too many factors are involved for any single test method to be completely satisfactory. Instead of merely registering the abrasion resistance of the ink, the results of a scuff test on foil labels also reflect the adhesion of the ink to the foil surface. This two-fold interpretation makes the scuff test on foil labels slightly more difficult to appraise than when it is performed on paper labels.

When performed on a printed paper label, the scuff test comes close to measuring the abrasion resistance of the ink. As a rule, the ink will penetrate into the paper surface and establish a mechanical bond with the paper fibre that is as strong as the fibre strength of the paper itself. However, the same test on a printed foil label measures two properties of the ink film: (1) The abrasion resistance of the ink, and (2) the adhesion of the ink to the foil surface.

Thus far, no ink adhesion test has been developed which is superior to the scuff tests. As a result, the scuff test, in spite of its acknowledged faults, has become the accepted method for determining the adhesion of inks to foil surfaces. It has always been difficult to determine reproducible adhesion values for lacquer films. Consequently, it is not surprising that the Sutherland test method fails to fulfill all the require-

Fig. 1. To hold test specimens in place, clamps were placed at the ends of the bedplate, replacing metal spikes originally used.

ments of the foil converting industry.

However, when the limitations of the Sutherland test are taken into account, it can be adapted to serve adequately as an auxiliary scuff testing method. In some applications it does not perform as well as other established test procedures. In these instances it is more convenient to use those test methods which are most familiar.

For example, Sutherland scuff tests performed on labels which have been overprinted with a clear lacquer are unnecessarily prolonged. It was not unusual for an overprinted label to require 2000 to 2500 Sutherland cycles before an end-point was reached.

Fig. 2. Because of difficulties in defining "bar toweling," the abrading medium used with this Sutherland unit was changed to cotton duck fabric.

The time to complete this number of cycles is approximately 45 minutes, and the frequent inspections of the specimen which are necessary will extend the time to test one specimen to approximately one hour.

The precision of the test is such that a minimum of six specimens should be tested if a reasonable approximation of the scuff resistance of the ink is to be obtained. Obviously, since other test methods are as precise and can be completed in a fraction of the time, the Sutherland is not a suitable test instrument for overprinted label stocks.

Modifying The Test

In addition to this restriction, two modifications were made in the testing method:

1. Clamps were added to the bed plate of the Sutherland unit so that the test specimen was held firmly in place.

2. The abrading medium was changed from bar toweling to a cotton duck fabric which was more readily defined.

Both these changes were made to reduce the possible sources of error. The test results obtained since these modifications were made do not indicate optimum precision, but the elimination of these variables did make the results more consistent.

The first of these modifications is illustrated in Figure 1. As will be noted in the illustration, the clamps were placed at the ends of the bedplate, replacing metal spikes which were originally used to secure the test specimen in place. These spikes protruded horizontally from both ends of the plate, and the operator fastened the specimen in place by forcing the ends of the specimen over these projections.

Although this method of fastening the specimen was rapid, it was not suitable for foil labels because the spikes had partially torn out of the specimen after a few cycles. Thereafter, the specimen slipped back and forth on the bed plate. Whether or not this action lessened the abrasion stress on the ink, its effect was unpredictable at best, so it was eliminated by securing the specimen firm-

ly in place with clamps.

Defining Abrading Medium

The second modification, changing the abrading medium, was made because the description "bar toweling" was not definitive. If printed stocks were to be accepted or rejected on the basis of this test, the abrading medium certainly demanded more thorough definition. Consequently, before the accuracy of the test method was determined, an evaluation of suitable abrading materials was begun. The materials tested were measured against four requirements:

1. The material must be readily defined and subject to relatively little variation in its physical properties.
2. The material should be easily obtained in all parts of the country.
3. The surface of the material should be mildly abrasive so that the test results would be suitably sensitive.
4. The material should promote a reproducible end-point within a reasonable length of time.

Because there was no history of experience with this test method, abrasives ranging from emery cloth to the surface of the label itself were evaluated. As experience was gained, the final choice of flat cotton duck fabric was made.

Initial testing was begun using a section of the label stock itself as the abrading surface. This choice of abrading surfaces provided a standard abrading surface and had the added advantage of approximating the ink-to-ink scuffing action to which the labels are often subjected. Considerable testing was completed before the label surface was disqualified as an abrading material.

The results obtained during these tests were erratic, showing widely varying scuff resistances for identical stocks. Apparently, the non-porous nature of the abrading surface trapped particles of grit and pigment between the scuffing surfaces causing premature end-points. Therefore, the foil label itself was judged an unsatisfactory abrading medium, and this series of evaluation tests was discontinued.

Selecting A Material

Following the evaluation of the label itself as the abrading medium, four additional materials were tested which represented a wide range in abrasive qualities. These four materials were as follows:

1. Emery cloth, grade 2/0.
2. Crocus cloth.
3. Cotton duck fabric.
4. Cotton broadcloth fabric.

Prior to beginning this series of tests, a sufficient quantity of a printed foil label stock was obtained so that all the abrasives were evaluated on comparable stock. The following table gives the results of these evaluations:

	Weight of Block — lbs.	Number of Cycles	Label Appearance
Emery cloth, grade 2/0	4	5	Badly scored
	2	5	Badly scored
Crocus cloth	4	10	Badly scored
	2	5	Badly scored
Cotton duck fabric	4	10	Lightly scuffed
	4	100	Badly scuffed
Cotton broadcloth fabric	4	400	No scuffing

As indicated, both emery cloth and Crocus cloth were much too severe for satisfactory use. Five cycles with these materials on either the four-pound or the two-pound block produced a degree of scuffing which was far beyond a reproducible end-point. At the opposite extreme was the cotton broadcloth fabric. No scuffing was obtained after 400 cycles, and the time required for each specimen was approximately twenty minutes.

Considering the limited time available to plant personnel, the broadcloth fabric was judged to be too mild an abrasive for control tests. The cotton duck fabric gave the most satisfactory results of the four abrading surfaces tested and it met the practical requirements of the Sutherland test satisfactorily. An additional advantage was the porous nature of the fabric which tended to occlude the offending particles of grit and ink chips which contributed to the premature end-points.

Consequently, the cotton duck fabric was adopted as the standard abrading material for all succeeding tests. A new strip of fabric was used as the abrading surface for each specimen tested and at the conclusion of the test the fabric was attached to the test specimen.

Defining The End-Point

Following the choice of the abrading surface, the end-point of the test was defined. As in all scuff tests, there are two possible methods of defining an end-point. One method is to designate the first break in the ink film that exceeds a stated minimum size as the end-point. For example, the end-point would be taken as the first break in the ink film that was approximately 1/64 in. in diameter.

The advantage in this method is that a consistent body of data can be accumulated over an extended period of time. The second method of defining the end-point is to rub each specimen to a pre-determined

degree of scuffing. A degree of precision can be obtained with this method that compares favorably with the first break method since the end-points of both procedures depend on the judgment of the operator.

However, the data obtained over a prolonged period of testing is inconsistent. Since the evaluation of the instrument was to cover a period of several months, the end-point of the determinations was designated as the first break in the ink film which exceeded 1/64 in. in diameter.

A second difficulty with regard to the end-point was the identification of true scuffing of the ink as opposed to a scoring of the ink that was caused by unavoidable dust particles. Despite the most conscientious effort to eliminate foreign matter from the test area, it was noted that scoring of the ink film occurred frequently. If the scoring of the ink film was allowed as the end-point, the results were completely unreliable, indicating extreme variation within specimens taken from the same press sheet.

Microscopic examination showed that those breaks in the ink film which were identified as scoring showed a clean cut edge and the underlying foil surface was gouged. On the other hand, those breaks that were identified as scuffing showed a ragged edge, as if the ink had been chopped away from the surface in small particles, and the foil surface was not marred.

These characteristics of the scuffed areas could be determined with a magnifying glass while the specimen was still in place on the instrument. Since scoring of the ink film was due to a cutting action rather than scuffing, it was not admitted as the true end-point of the test. When it occurred prior to a true scuffing break in the ink, it was disregarded and the test was continued until true scuffing was obtained.

Importance Of Definitions

The preceding discussion may leave the impression that the primary object of this investigation was to explore the minutiae of the test procedure and only secondarily to determine the results of the test itself. However, following the study of the test procedure, 26 production lots of printed foil labels were tested.

The results indicate that an effort must be made to define every facet of the test procedure if the Sutherland ink rub test is to become anything like a quantitative measure of the scuff resistance of inks on foil. A total of 156 test specimens were taken from the 26 production lots, and the average variation in results between six specimens cut from the same press sheet was 38%. Thus, if a reading of 40 cycles was obtained on a single specimen, readings of 32 and 48 cycles could be expected for specimens from that same press sheet.

Attempts to attribute more accuracy to the individual scuff values would be misleading. Actually, the average variation is the best precision that can be claimed for the test method as it was practiced during this study. Within the 26 production lots tested, the complete range of variation between six specimens from the same identical source was from 10% to 83%. It is evident that significant results will be obtained only if multiple specimens are tested from each label stock and the individual results averaged. Even under these conditions, the limitations of the test method itself should be borne in mind.

Obviously, the Sutherland rub test is subject to the same errors that can be attributed to any empirical test. The wide variations just reported were obtained despite a strenuous effort to standardize the test procedure. Furthermore, the results were all obtained by one operator which substantially reduced the differences in interpretation which would have been present had more than one operator been involved.

When the details of the test procedure are left to the convenience of the individual operator, the accuracy of the test could be expected to fall appreciably below these reported values. Unfortunately, while the broad outline of the procedure is published, there exists no standard procedure which would confine individual operators to a generally accepted, well-defined routine. As a result, a comparison of test values between laboratories is apt to be more confusing than illuminating.

Rise Of Specifications

Concurrent with the growing confusion in reported scuff test values, the use of printed foil specifications is also constantly growing. With increasing frequency the customer who uses printed foil products is including a scuff-resistance requirement in his specification for the printed foil items he buys.

Under these circumstances, the necessity for an industry-wide re-evaluation of the Sutherland rub test is becoming more urgent. The alternative to this undertaking is an endless number of individual agreements between customer and supplier, laboratory and laboratory, defining the conditions under which the tests will be conducted. In the final analysis, it would be more economical in time and effort, and far less frustrating, if a standard procedure could be established for the Sutherland test method.

As a part of the laboratory evaluations which would be necessary to define a mutually satisfactory standard procedure, the reproducibility of the Sutherland test should be established. This information would be of considerable value to those who constantly make use of this test method. When a scuff value is reported, there is a tendency to regard it in the same unquestioning manner that is inspired by the results of a quantitative chemical analysis.

Consequently, the results of scuff tests frequently assume an infallability which is out of proportion to their true accuracy. Unless the complete circumstances of the test are reported, especially the number of specimens tested to arrive at the reported value, the results are practically worthless. If the accuracy of the test is established, the details of the procedure can be adjusted so that the reported results from the test will be significant values. It is unfortunate, but at present the reported values of scuff resistance are generally questionable approximations.

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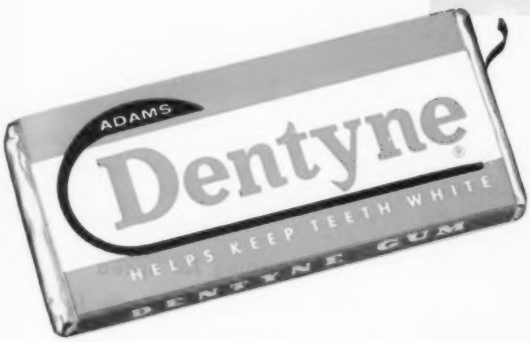

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Reducing packaging line impacts to minimize breakage of glass jars

Development of sound practices contributing to impact reduction on glass packaging lines entails both mechanical and personnel factors. The Quaker Oats Company had an effective program even before switching to a lighter weight glass jar at one of its plants. This article discusses the effect of the change on the company's operational methods and enumerates details pertinent to such a program.

When the Quaker Oats Company introduced a lightweight glass container for its Ken-L-Products plant at Rockford, Illinois, it intensified its program to reduce glass breakage on its line and incorporated into its procedure special precautions for handling lightweight jars. Although these containers have the same tensile strength as the jars they replaced and have the same resistance to breakage, their use evolved a new series of operational and movement patterns on the plant packaging line.

Some of the major changes made for the new container represented machinery adaptations and the building of special equipment to reduce the shock and impact. Other changes concentrated on the education and training of line workers and the use and problems of the lighter weight glass jars.

Hazard Of Repeated Impacts

Without regard to jar weight, one of the most important efforts in the reduction of glass breakage is chiefly educational; it involves impressing workers with the danger of subsequent damage due to repeated impact. Very often a packaging line attendant feels he is not contributing to container damage because no jars break at his work station.

He does not realize that the impacts he contributes to the containers result in their eventual failure elsewhere. Quaker Oats plant management has devoted considerable effort to indoctrinating its line workers concerning the contribution that impacts make to container failure — even though the impacts do not result in breakage at the moment they occur.

Some of the innovations grew out of the vulnerability of glassware to thermal shock. During cold weather, glass shipments arriving in motor trailers obviously are quite cold. Because of jars from these shipments going immediately to packaging lines, the plant added a tempering water solution in order to reduce the possibility of thermal shock. Jars now go through 100°F. water as a preconditioning treatment for the sterilizing action which takes place in water at temperatures in excess of 180°F. Use of this 100°F. water preconditions the jars for the sterilizing process and avoids the breakage that might result from extremely cold jars being immediately subjected to 180°F. water.

Another effort to reduce damage is largely mechanical. At the start of the line is a W. F. and John Barnes bottle unloader. Originally this operated with a wire mesh belt for the dumping action. In order to reduce the shock of impact for the new containers, the plant changed this equipment to use a Neoprene belt. Since changing to this belt, the plant has found that the jars withstand shock much better and are more resistant than was the case when the equipment used the wire mesh belt.

Also the plant engineers installed a second bath, using 180°F. water. This takes place after the jars are inverted and it thoroughly warms them for the subsequent filling action. Conveyors are positioned so that the jars ride about 10 feet in inverted position, which allows adequate drainage of water. After being returned to upright position, they ride about 12 feet to the filling operation.

Retarding Jar Speed

The inverting action calls for a unit of conveyor twists. The plant added a second spring retarder to supplement the work of the retarder originally installed. These serve to reduce the speed of jar movement through the twists. This is particularly important when there is a gap between groups or files of jars going through.

If there is a steady flow, the problem is not serious. But if there is an open space or gap, the jars could go through the twists at a fast rate of speed and then move along the conveyor until they hit the file of jars just ahead of them. By having the retarders on the twists, the jars' speed is braked so that there is not as much impact when they do reach the jars in the file ahead as there would be if there were no retarders.

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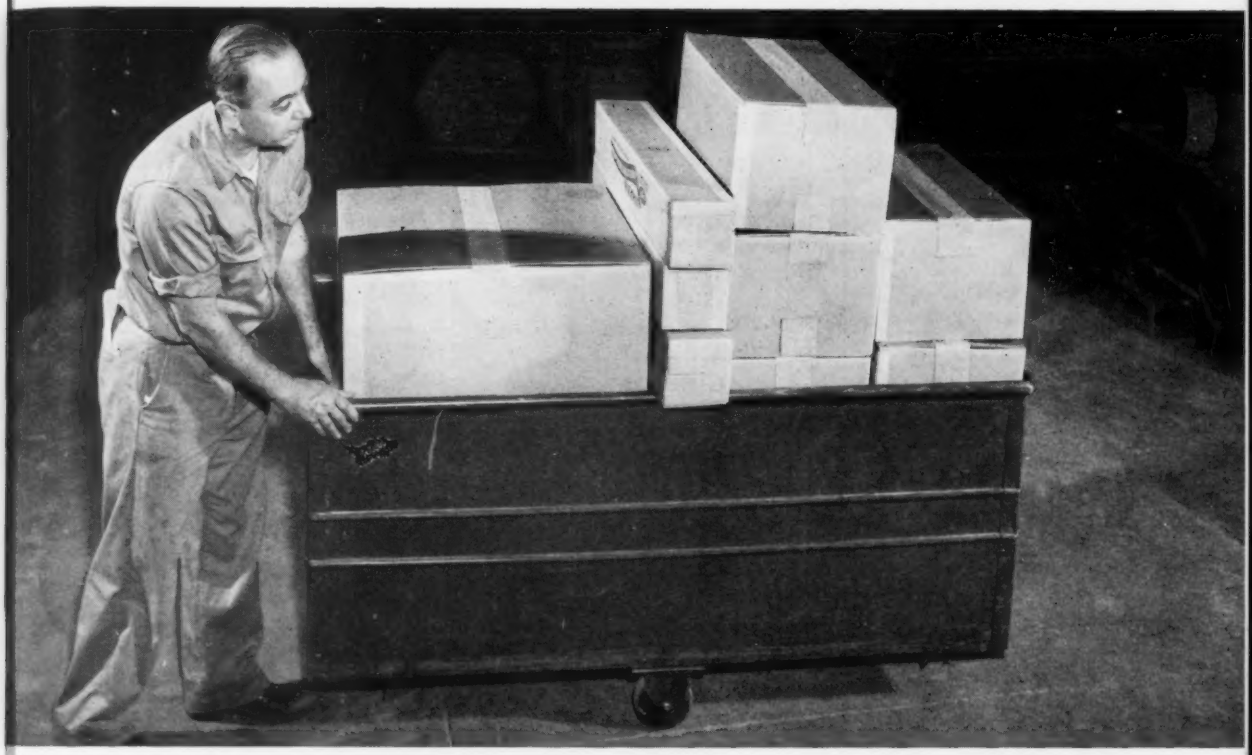

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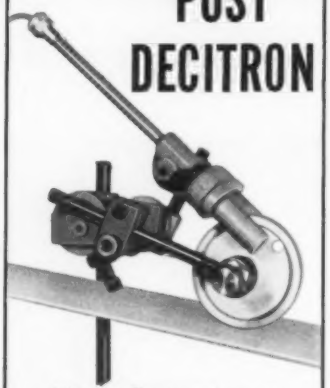

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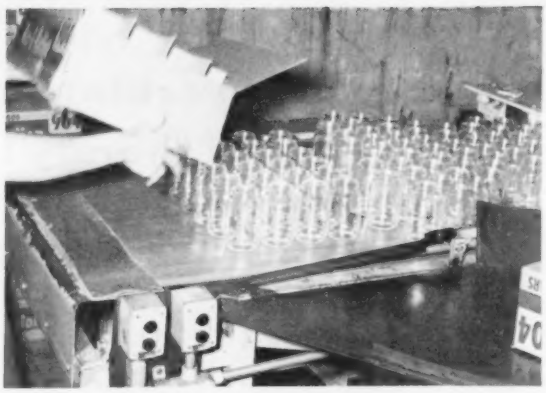
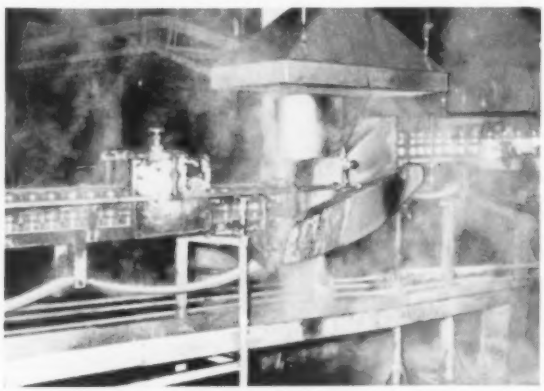
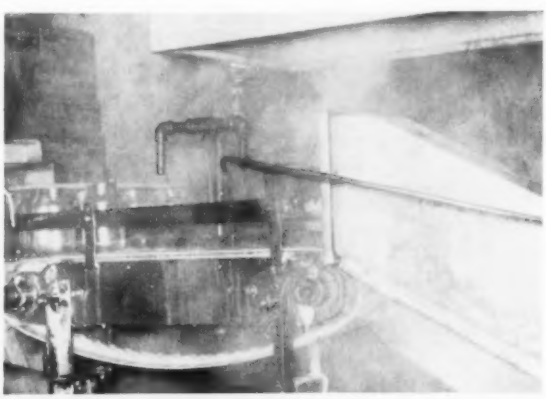


1. Use of Neoprene belt instead of one made of wire mesh is contributing to the reduction of jar breakage. Quaker Oats now finds that the jars withstand shock much better and are more resistant than was the case when the wire mesh belt was in use. This emphasizes the care taken to reduce opportunity for impact.



2. To reduce the vulnerability of glassware to thermal shock jars go through 100°F. water as a preconditioning treatment for the sterilizing action which takes place in water temperatures in excess of 180°F. The 100°F. water avoids breakage that might result from cold jars immediately entering the 180°F. water.



3. Placing a lubricant (Oakite No. 6) on the shoulders of each jar helps the movement of glass through the packaging line. This is especially important as jars go over dead plates and through twists. The flow is not metered, but a narrow orifice assures only a small amount going on each jar.

Prior to the filling operation, jars are inspected visually for cracked surfaces, foreign matter, or various deformities such as affecting the finish. From here each jar is indexed into an FMC filler which is belt driven from the closing machine. This is an Anchor-Hocking unit that handles 145 to 150 23-ounce jars a minute. Both of these machines are standard units.

From here the closed jars move to the Busse loader. It is at this point that great precautions are taken to avoid the impacts so conducive to jar breakage.

Avoid Loading Shocks

This involves a combination of manual and mechanical action. As jars move down the conveyor leading away from the closing machine, they accumulate for the retorting action. The purpose of the Busse loader is to accumulate and deliver to the baskets successive stacks of jars for retorting.

The plant added a series of coil springs around the inside of the circular or circumferential guide into which jars are pushed to load them for the retorting process. Its technicians also added a belt-like padding around this inner area as a further protection against shock. Use of the springs particularly has helped to release or reduce the shock and impact of the loading action.

The major feature of this operation is the training of personnel. Crew members are taught to load the jars with a gentle but complete push that is steady and continuous, rather than quick and short. Crew members use rake-like tools that have curved arms, known as sweeps. These serve to push the moving jars into place within the circular area of the retort loading equipment.

Proper Training Necessary

It is all-important that the attendant reduces the speed of his pushing when he gets to the end of his sweeping distance. Few points on the packaging line offer as much opportunity for damage reduction as this station offers. Good training of this man is vital to the successful operation of a

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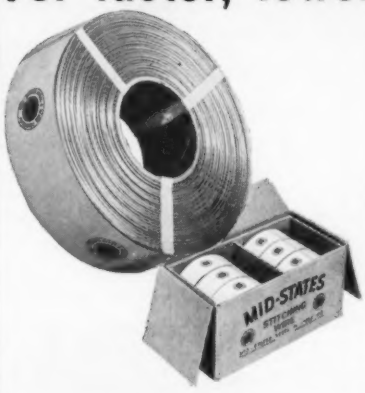

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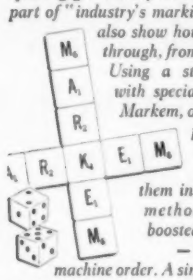
Seven come eleven, and other games . . . *like the sporting goods story told here previously, are all part of "industry's marking requirements." They also show how Markem sees the job through, from machine to final mark. Using a standard 25A machine, with special fixtures suggested by Markem, one manufacturer is now printing one side of 15 dice at a time. Compared to leaf stamping them individually, the Markem method has cut costs and boosted output tremendously —resulting in a second machine order. A similar business is running up their score, printing game tiles 132 at a crack with a special 25A. Whether your business is games, drugs, electronics, textiles, shoes or another field — your marking problems have answers at Markem.*



From Belgium to Brazil . . . *languages, customs and clothes may be different, but all share a common requirement for identification decoration marking. Take pharmaceutical houses: in Chicago, New York and other U. S. locations . . . in Panama, Belgium, Brazil, Turkey and other spots around the world, Markem 45AE machines are imprinting batch and date codes on small cartons for drug items. Wherever your business is located, and whatever your marking needs, it may well pay you to see what Markem can offer. Ways to mark products, parts, packages—for decoration, identification or control—have been Markem's business for almost 50 years. Some good answers have been developed in that time—some that probably can help you.*

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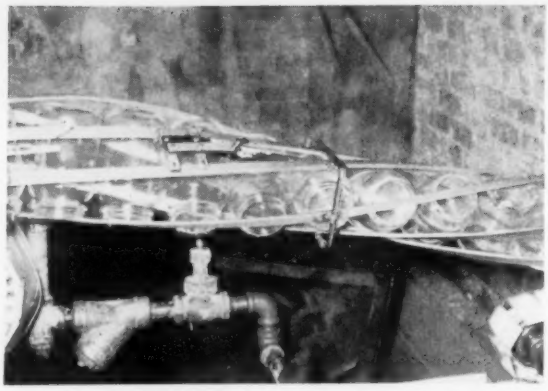
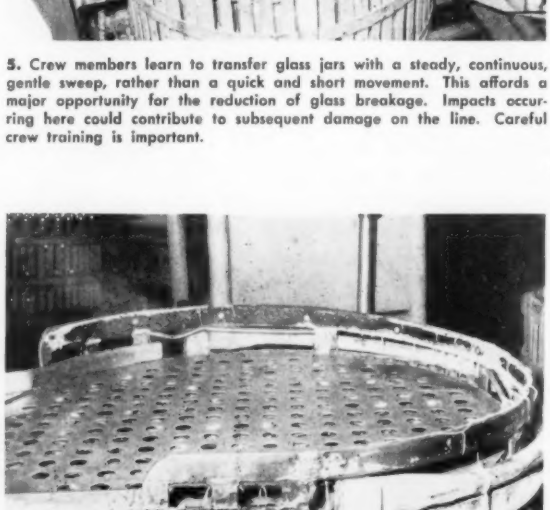


4. Adding a second spring retarder to supplement the work of the retarder originally installed on these twists helps cut the speed of jar movement. As a result when there is a gap, the jars do not hit those piling up ahead of them as hard as they would hit if no retarding of their speed took place as they pass through the twists.

5. Crew members learn to transfer glass jars with a steady, continuous, gentle sweep, rather than a quick and short movement. This affords a major opportunity for the reduction of glass breakage. Impacts occurring here could contribute to subsequent damage on the line. Careful crew training is important.



6. Adding a series of coil springs around the inside of this circular area helps reduce damage to glassware. A belt-like padding around the inner area of the circular guide also protects against shock. The springs and padding work together in reducing or releasing the shock and impact of the loading action here.

glass line. It is here that instruction in regard to the danger of successive or repeated impacts is of most value.

Because jars do not break at his station, it is hard for him to visualize that subsequent breakage is due in part to his impacts. However, once he learns the importance of this and once he develops the steady sweeping action that replaces what otherwise would be hard, jerky pushes, he can operate with considerable success. And when he reduces his speed, the jars he is pushing do not hit the other jars or the perimeter of the platform with as much force as if he did no slowing down.

This is particularly a problem on the first layer of a retorting basket. He may get a little behind in changing from one basket to another and may have to catch up. Sometimes he does this by speeding up in his pushing and transfer of the jars. However, proper training plus adequate supervision means that he knows the danger of repeated or successive impact and he takes proper care in sweeping or pushing his jars into position on the retort basket layers.

After going through the loader, the filled jars pass through a standard retorting action which is a combined cooking and sterilizing procedure common to food plants. Upon completion of this process, the jars go through the Busse unloader, which delivers them single file onto a conveyor for a washing operation that thoroughly cleanses the jar exteriors. Following this they go through a drying operation so that all water drops and particles are dried, leaving a uniform appearance prior to jar labeling.

Getting A Smooth Flow

The plant engineers and technicians found they could reduce the breakage and damage by facilitating the smooth movement of jars along the line. Jars tend to jam up or pile at various transfer points. This is particularly true where there are stationary areas such as wear plates.

Currently the plant is experimenting with Teflon as a substitute for the brass wear strips. Teflon is smoother than brass and contributes

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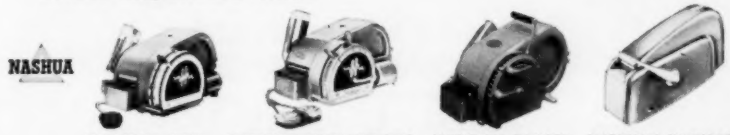

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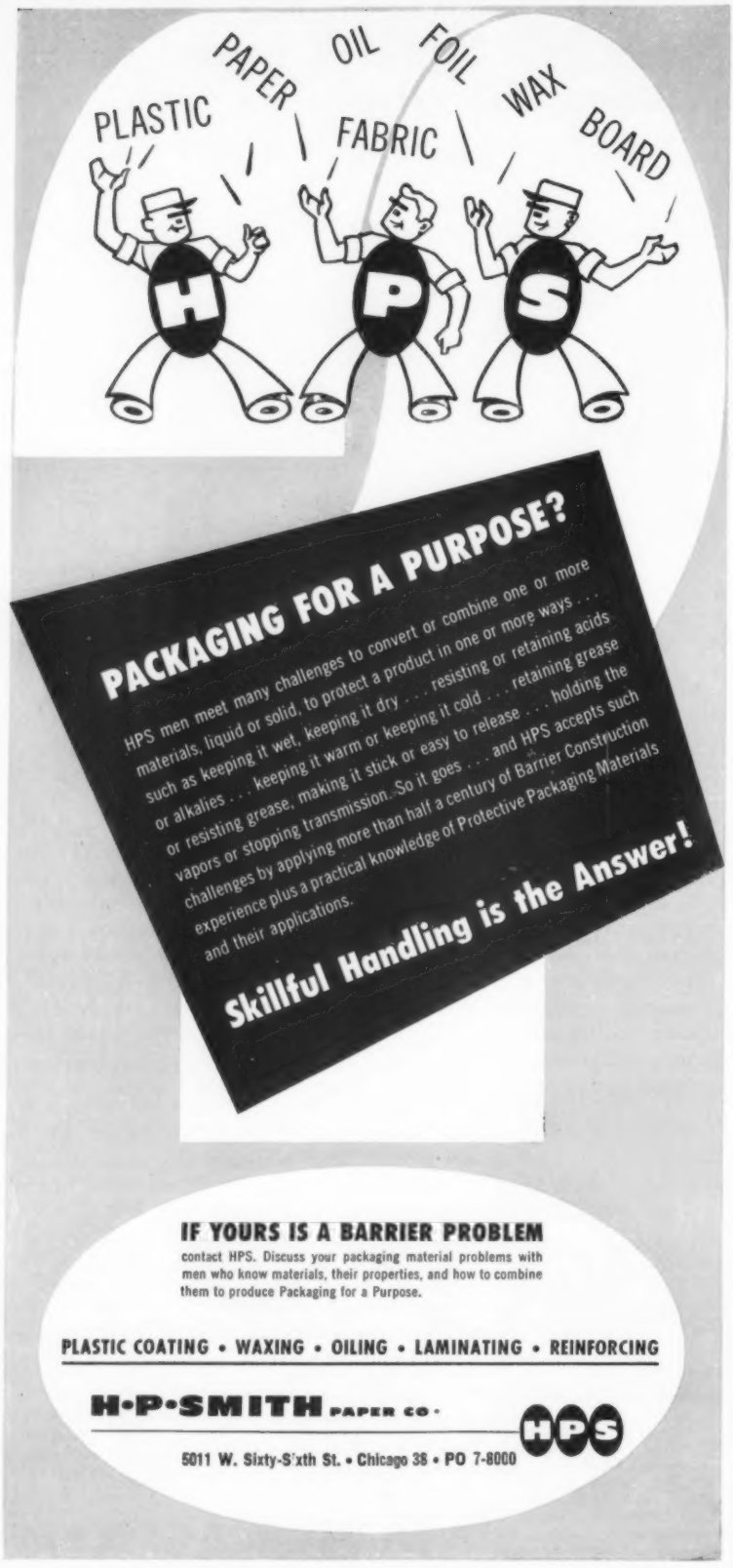
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to a steady flow to minimize the jamming or collecting of jars at these transfer points. The brass, on the other hand, acts as a brake.

From here the jars go through a Standard-Knapp labeler, then through a Standard-Knapp case packer. After labeling and before casing, the jars are inspected. Also an attendant wipes off the jar tops, as sometimes film appears there. At the case loading station, jars go into the same corrugated reshipper boxes in which the empty glassware arrived. From there they move to the case sealing equipment. Following the sealing of cases on the Ferguson machinery, they are palletized for either storage or direct shipment.

An important step taken to reduce breakage of jars due to the impact is to keep an even flow of work through the labeler. Likewise at the case loading station it is important for the crew member there to make sure that each case is properly spotted so the jars go into these cases in the proper way. Unless the case is properly spotted, there is some danger of jars falling.

Another step taken to reduce glassware damage was to add rubber strips at the dividing points at each station where one file of jars divides into two for the case loading operation. Since jars leave the labeler single file and have to be four abreast for the case loading operation, there are three points at which they would strike metal dividers. Placement of rubber at these dividing points has reduced damage and breakage.

Jar Lubricant Important

Another significant technique that contributes to the movement of glass jars is the plant's use of Oakite No. 6 as a lubricant. Its application point is just ahead of the sterilizer — after the empty jars have moved out of the unscrambler at the head of the line. The plant has a device that puts a small quantity of this lubricant on the shoulders of each jar.

This is not a metered flow, but the narrow orifice used assures that a relatively small amount goes on each jar. However, there is a steady flow; this material proves extremely help-

ful in assuring movement of glass through the packaging line.

Some of the plant operating people point out that they could not run without the use of this lubricant. They say that it is especially important as jars go over dead plates and through twists.

Still another point of emphasis in connection with the handling of glass jars is the use of well-trained crews. The plant management group has taken particular efforts to see that each crew member is educated in the proper handling of these jars. The introduction of the lighter weight glass jars merely intensified the existing program. Part of the damage reduction program may rest on the fact that crew members are on incentive.

It is the practice of the plant to insist that each crew member keep his own area clean. There is no attendant or sweeper who goes around to pick up broken glass, dropped containers, and the like. As a result, each man has to clean up his own breakage and this makes him very much aware of the effect of breakage and damage to containers. He must sweep them up himself and dispose of them whenever jars or other containers hit the floor.

Making Crews Impact Conscious

The plant management has taken distinct steps to make the packaging line people aware of losses. They have been seeking to sell these workers the idea that the plant's loss is also their loss.

Nearly a year of experience with the lightweight glass jars has revealed that very little breakage occurs after the cases leave the packaging lines. These jars go through shipment very well with normal handling and the plant management reports that no substantial damage takes place after they leave the lines. This emphasizes the value of the educational program and mechanical steps taken to reduce the effect of repeated impacts within the plant by minimizing the opportunities for impact.

Thus in capitalizing on the advantages of the lighter weight jars such as the saving of freight, the plant has developed operational techniques to facilitate their use in the plant. Similarly, it has coordinated this program with its general efforts to eliminate such difficulties as might be due to thermal shock. For example, the bottom of the jar is the critical point from the standpoint of thermal shock. Even so, almost any place where there is a sharp angle is likely to be such a critical place. Possibly it could be at the shoulder of the jar as well as at the base.

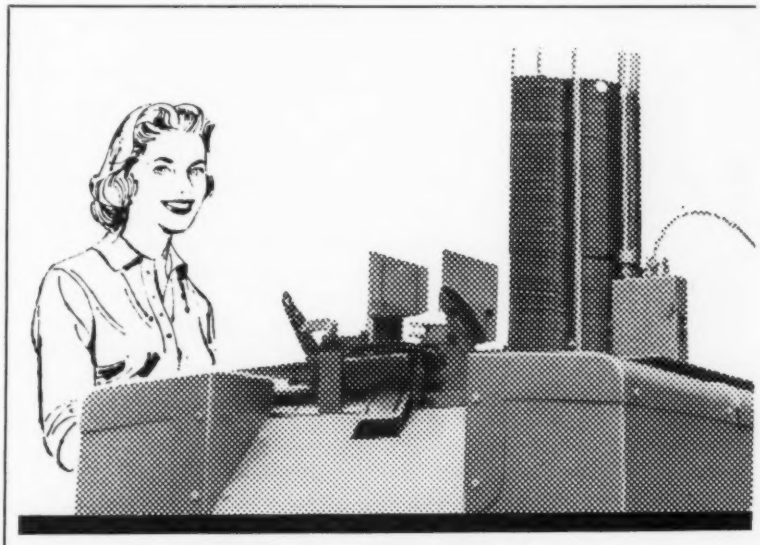
To offset these possibilities, the arrangement and positioning of the water and washing equipment has been worked out to apply water at these critical junction points of the jar. In this way effort is made to reduce thermal shock.

To reduce glass jar breakage:

1. Train your crews to guard against repeated impacts — not the first, but the last impact breaks the jar.

2. Judicious use of padding of rims, stationary members, etc., reduces the hazards as to points where jars hit stationary objects or fixtures.

3. Retarders along the line cut the speed of moving jars, thus lessening the chance of damaging impact against other jars.



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Andrew W. Crawford, Jr., has been associated with Olin for the past five years. Prior to that he was designer and purchasing agent for Stahl-Meyer. His previous association with the field of packaging includes work with Arabol Manufacturing Co., M & M Ltd., and three and one-half years as field service and set-up man for Transparent Wrap Machine Corp.

As packaging machinery speeds become higher and higher, the relationship between machinery and material becomes increasingly critical. In this article Mr. Crawford discusses some of the requirements imposed by machinery, the uniformity of film, problems of film feed and cut-off, and such intricacies as the locating of the sheet on a package — as well as problems of heat seal. He emphasizes many of the subtleties contributing to efficient operation at high speed.

Cellophane and high speed packaging machinery

By Andrew W. Crawford, Jr.
Film Service Supervisor,
Film Division,
Olin Mathieson Chemical Corp.,
New York

Back in the middle 30's a cellophane wrapping machine that could be depended upon to produce packages at a speed of better than 50 neat wraps a minute was considered a real speed demon, but times have changed. Today, rising sales volumes, rising labor costs, and increases in the speed of processing equipment have in many plants made these machines as out-of-date as the old, reliable Model A Ford.

The natural competition between machinery manufacturers, coupled with the need to "wrap it better, faster, for less," has spurred on the development of several new, very high speed, fully automatic cellophane overwrapping machines. Some of the new units are capable of overwrapping small cartons in cellophane at speeds approaching 400 per minute, and perfectly registered printed wraps can be made at a rate of 250 per minute.

Adequacy Of Cellophane

Obviously, these changes in productivity rates have required both the cellophane producer and the machinery designer to re-examine some of the methods used in the past to get film around a package. Was cellophane adequate for use on the new machine? What limitations were imposed by films as they then existed? What special techniques in film handling and feeding had to be developed?

Cellophane's Latitude

While cellophane afforded surprising latitude in its ability to seal over a wide combination of heats, pressures, and dwell times, it was apparent that some improvement in its characteristics might be desirable to more fully answer the challenge of the new machines available for packaging operations.

Requirements Imposed By Machines

As is so often the case, the machinery manufacturers and the film producer worked together on a rather informal basis. In the case of my own company, we became convinced of the need to improve the high speed or marginal sealability of cellophane some three years ago. At that time we tackled what we called our Marginal Sealability project. Our goals were quite clearly defined and our specifications were rigid. The film's heat seal coatings had to be sufficiently hard so that they wouldn't block under summer shipping conditions or come off on the machine's heater plates, yet they had to soften in the dryer of a printing press to permit inks to fuse properly.

In strength, clarity, slip, durability, and protective characteristics, they had to remain unchanged; otherwise

they would be unsatisfactory to our customers. They must feed smoothly, fold properly, and — the jackpot qualification — they must develop their seals at previously unheard of speeds. To meet these stringent requirements, dozens of experimental coating formulae were developed and lab-tested; high speed test equipment was built which duplicates almost any combination of heat, pressure, and dwell time found in the field.

At the end of nearly two years of intensive laboratory and field testing, we hit upon a set of modifications which gave our customers (and the machinery manufacturers) reliable, strong, fast tacking, heat seal coatings without otherwise affecting in any respect the characteristic properties of the various film types in our line. We now had something hot to offer to the machine designer.

Four Basic Problems

From the machine designer's standpoint, cellophane has always been a nice film to work with because of its relative stiffness, its wide sealability range, its cleanliness, and ease of handling in general. But on high speed equipment, a number of design problems arose. These appeared to break down into roughly four categories.

First, there was the basic problem of getting film to feed properly through the machine at high speeds.

Second, it had to be cut off at some point and located properly on the package.

Third, it had to folded; this wasn't too much of a problem in the past, but how about at speeds approaching seven wraps a second?

Fourth, the film had to be heat sealed and the package delivered.

And, above all, the new unit had to have an extremely high degree of reliability in performing these functions. Imagine for yourself the consequences of a jam at speeds such as these! Let's examine some of the questions in greater detail:

Uniformity Of Film

We implied earlier that the cellophane, in order to feed properly,

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might perhaps have to be more uniform. Fortunately for the film manufacturers, this was not too much of a problem as we have, over the years, constantly tried to boost our inspection standards and to improve the over-all uniformity of our casting and coating processes. Since the new machines were to run at a film unwind speed of 200 to 300 feet a minute, there wasn't much new here; printing presses all over the U. S. were running film at these and higher speeds.

But uniformity doesn't simply mean uniformity of film gauge, roll windup tension, or moisture and softener content. Here, variations in the slip characteristics of the film could conceivably interfere with the proper feeding of the cellophane around the package or with the proper cut-off length. Fortunately, such units as high speed cellophane bag machines had made similar demands at an earlier date, and our slip characteristics were now so closely controlled that we could offer our ready-to-wear cellophanes with complete assurance.

Film Feed Problems

What about the superficially simple-appearing job of unwinding film from the roll? On all intermittent-feed machines there is some form of a brake and dancer roll mechanism to even out the rate of unwind as successive packages are made; the new units, luckily, are so designed that the film feeds virtually without interruption and the unwind rate is almost without fluctuation.

Control of the film web is somewhat simpler, therefore, up to a point; that point is the moment of start up, or shut down. When these fast units start up, the stationary roll, which may be as much as 13" in outside diameter, has plenty of inertia. It doesn't want to move and the strain on the film web can be tremendous.

To avoid film breaks or the necessity of building a powered roll unwind device, the new machines have a brief, but sufficient, acceleration period. At shut down, a very power-

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ful brake mechanism stops the rapidly moving roll smoothly to prevent festooning the film all over the floor. We might mention here that one high speed unit manufacturer is seriously considering building a flying splice attachment so that there need be no shut downs at all for roll changes.

But one rather new factor did crop up: It was quickly discovered that variations in carton surface finishes, some of which are affected to quite a degree by atmospheric humidity changes, play a very important part in high speed machines. Day-by-day and hour-by-hour uniformity of carton size and surface finish are quite important to the proper feeding and forming of high speed wraps, as carton surfaces which vary in surface characteristics will not always pick up the film in the same way.

Film Cut-off

Film cut-off was a bit of a problem. A guillotine knife couldn't get out of the way fast enough, so a highly hardened knife working against a relatively softer rotary steel anvil was tried; this cut-off unit was set to rotate at a considerably faster rate than the rate of film feed so that it wouldn't interfere either with the web or the cut-off sheet.

The high speed of the rotary knife, unfortunately, caused the cut edges of the film to shatter almost like window glass. After much experimentation, the rate of rotation was dropped until it was just a bit faster than the web speed. This gave perfect cut-offs.

Locating Sheet On Packages

Now we come to the placing of the film around the package, and here it appears that a fundamental departure from conventional wrapping machine design principles is desirable. When packages are traveling at very high speeds, it is unwise, from a design standpoint, to attempt to stop them in their flight or to make them change flow direction. Doing so sets up stresses, increases the possibility that the package will get out of con-

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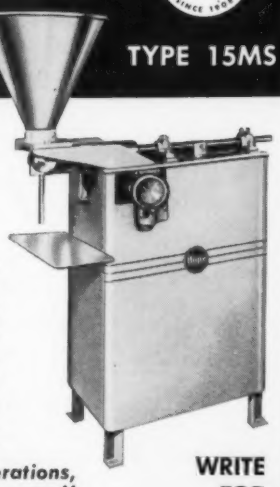

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Another first for Hope . . . This new, small, streamlined floor model accurately handles liquid, viscous and semi-solid products quickly and at the lowest possible cost! Excellent for pilot runs, small operations, laboratory testing, small batches and short production runs of a color or product.

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releases packages from any position without imparting rotation

Handles long and odd-shaped packages (unlimited length, up to 24" square)
Drops from height of 12" to 60"
Spring operated—no power connection
Installs in 3' x 4' floor space
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Originators of Scientific Package Testing Equipment

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Compact, portable attachment adapts to any line . . . imprints 600 cans per minute

The Gottscho "Model TB" MARKOCODER® machine is a unique, fully automatic, packaging line attachment for coding beer can *bottoms* at high speeds. Makes consistently clean, permanent ink imprints. Designed for quick code changes, simple maintenance, easy adjustment for different size cans. Offers all the advantages of a fixed-installation imprinter without requiring alteration of present line set-up.

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Automatic Production-Line CODING, MARKING, IMPRINTING MACHINES

trol, and requires that the designer use an intermittent, stop-and-start reciprocating design principle which may lead to wear and greater maintenance problems.

For these reasons and others, a straight-away design seemed indicated — one in which the package shot straight through the unit without changing flow direction or speed. This meant, however, that in order to duplicate in appearance the usual double-point end fold package, the designer had a host of new problems to resolve. One high speed machine forms a long tube around the package and then chops the tube into sections, at the same time forming the end seals.

Another machine, by some extremely ingenious mechanical sleight-of-hand, makes a completely conventional-appearing bottom first-fold and seal, and conventional-appearing double-point end folds. But the operations involved in doing this job are far from conventional!

In this unit, cellophane feeds down from a point above the oncoming package through a narrow slot in the machine's bed plate. The film is cut off and the package itself carries the film to the first-fold section, where a most ingenious device positions it properly in the center of the package and then seals it. Next, as the package moves forward, the leading edges are tucked back and rotary tuckers take care of the trailing edges. From here on the job is relatively easy. The only concessions needed in making the final folds were to extend or make gradual the angle of the folding plows.

Photocell Registration

By ingenious design, we have now cut off and located a piece of cellophane properly on the package — at speeds approaching 400 per minute! Can it be done with printed cellophane? The answer is yes, but some concessions in speed have to be made, for now we are into both aspects of registration: First, that of mechanically placing the film properly on the package and second, that of controlling a printed web traveling at around 200 feet a minute to pro-

vide photocell registration to within a tolerance of about 1/16 of an inch, plus or minus.

Top speeds here, at the present time, are in the 250 packages per minute range. Unexpectedly, a two-way compensated registration system has not been needed. The printed film is normally set to feed a fraction of an inch short of what is required and an overriding feed device located just ahead of the knife kicks along just enough additional material to trip the eye.

Heat Seal Problems

In sealing packages on the high performance units, the cellophane manufacturers ran into a few problems since the two star performers in this field pose very different problems of sealability. In one case we have to seal a tube formed around a package. There is almost no pressure involved in forming the seal other than through the resistance of the taut cellophane web to the reciprocating sealing bar.

Seals are made at around 600°F. and frequently a rotary applicator is used to apply a narrow line of resin solvent solution to one edge of the film. End seals are made under very heavy pressure, but dwell time is exceedingly short as this job is done by rotary crimp sealers. In the other case, we have a machine which makes heat seals by means of the usual type of side and bottom seal plates. If desired, this machine can be set up with glue or solvent pots, but such additions are unnecessary in running such heat-sealable over-wrapping films as MST-52 and MST-54.

Other Heat Sealing Materials

Though the author quite naturally has a certain axe to grind in behalf of cellophane, he would be less than fair if he didn't point out that these new machines also do a fine job of running certain other kinds of heat-sealable materials, too. For best results a fairly stiff sheet which will fold sharply and cleanly is preferred. A 450-gauge cellophane, for example, will usually yield a better looking package than the lighter 300-gauge films.

More flying splices?

Producers of corrugated board long have changed rolls without stopping their machinery. Likewise, converters and bag manufacturers are making increasing use of splices "on the fly" to save the time otherwise lost in roll stock changes. How many users are making the most of such techniques? The obstacles and opportunities surrounding their use offer an intriguing challenge.

MODEL B-49 STRAIGHTLINE VACUUM FILLER. Most automatic one-operator multiple filler. With or without discharge conveyor. Contact parts of stainless steel, plastics on order. Adjustable for container sizes from AGST to gallon size finishes. Send for Model No. B-49 Bulletin.

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Whatever your liquid filling needs may be (from hand-filling to automatic-filling), write us for recommendations. Profit by specialized know-how to cut your filling costs to the minimum. This will not obligate you. Write for Individual Bulletins on any U. S. machine.

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SPECIALISTS IN LIQUID FILLING AND CONTAINER CLEANING EQUIPMENT

Frank J. Kautter has attended Lewis Institute of Technology and the Armour Research Foundation of the Illinois Institute of Technology. He has been associated with Signode Steel Strapping Co. since 1948. After five years as a Field Engineer, assisting Signode customers with their packaging and carloading problems, he was assigned to the Factory Division as its resident packaging engineer. In January, 1957, he assumed the position of Shipping Superintendent as well. His professional affiliations include SIPMHE and American Materials Handling Society.

Many problems arise in establishing the centralized control of a decentralized packaging operation. The experience of Signode Steel Strapping Company reveals some useful guideposts in packaging small quantities of a product usually shipped in large quantities — and doing it with maximum convenience to its far-flung branches. In this article Mr. Kautter reviews his product virtually on a step-by-step basis and offers practical suggestions concerning just how to go about such a project.

Centralized development of a decentralized packaging operation

By Frank Kautter,
Shipping Superintendent,
Signode Steel Strapping Co.,
Chicago

We recently faced the problem of packaging our steel strapping coils in individual packages to meet the needs of small lot users. Most of this material goes out in 650-pound shrouded loads. Since these large quantities did not meet the needs of package users requiring just one or two coils at a time, we undertook development of special packaging to meet their requirements. At the same time, we had to devise a package easy for our various branches and warehouses to handle with a minimum amount of equipment or tools.

Individual coils of strapping weigh 85 to 100 pounds each and are relatively small in proportion to their weight. Unfortunately we cannot ship these as bare coils because damage can occur due to the entangling of a strand within a coil. Also the strapping may catch or hook onto something. Another problem is that carriers, truck drivers, and the like show a tendency to roll individual coils — whether wrapped or unwrapped. This results in lopsided coils. The strapping frequently gets loose, as we have learned.

Estimate Packaging Volume

An important first step was to study our shipping records to determine our volume and distribution of single and double coil customer requirements. This gave us a clear idea of the probable volume of such packaging. The next consideration was that of simplicity of packaging. In reviewing alternative packages, we had to consider that our branches and warehouses would not have wrapping machinery. Further, the volume of such individual packages precluded our furnishing them with such equipment for this relatively small volume of individual coil packaging.

In our search for the most suitable packaging, we looked at various paper possibilities (reinforced and otherwise), including polyethylene combinations and other paper laminations. We also looked at a variety of corrugated board packaging.

We eliminated some materials because they required wrapping machinery and others because they were found excessively weak or resulted in stepped-up labor costs. Materials using plastics proved prohibitively expensive. Thus our choice narrowed down to the various forms of corrugated board.

Examine Three Designs

After reducing our alternatives to three basic designs, we undertook a program of testing. These designs

included a container of hexagonal style, a five-panel folder, and a full overlap regular slotted container. We eventually settled on the full overlap container. It withstood all of our tests and also represented a package easy to use and close with minimum labor. Although the other corrugated packages passed our performance tests, we discarded them because of their need of additional labor in our plant or warehouses.

Prior to making our performance tests, we studied the various patterns of movement and transfer which our packages experience. We found that in a typical case a packaged coil of steel strapping experiences the following movements: (1) Actual assembly; (2) storage — but not in all cases; (3) storage to truck — handled manually, on a dolly, or by some other method; (4) truck movement; (5) transfer from truck to dock at a relay point; (6) movement back into another truck, and (7) out of the truck at a package user's plant.

Which Tests To Use?

Using this information as a guide in determining the vulnerability of a package or the durability it needs to withstand these hazards, we established a test pattern. We found the following set of tests helpful in evaluating our single and double packages. Typically the tests involved a 50 foot-pound impact.

Single packaging:

6-inch drop on corner — single
6-inch drop on face side — single
Vibration on flat side
Vibration on edge side
6-inch drop on corner — opposite
6-inch drop on face side — opposite
6-inch drop on small flat
6-inch drop on opposite flat
Vibration on flat side
Impact on flat and side at 5, 6, and 7 miles per hour

Double packaging:

6-inch drop on face (flat) side
6-inch drop on corner
Vibration on flat side
Vibration on edge side
Test for rough fork truck handling
6-inch drop on edge

VERSATILE 4 VALVE FILLER

ELGIN "QUAD"

For Liquid and Viscous Products

Ideal for glass or tin containers, the Elgin "Quad" is the highspeed, accurate producer—easily and quickly adjusted for fill, and speed! The piston stroke which governs fill in all 4 valves is easily controlled by a single micrometer screw adjusting handle. The upper table assembly is quickly adapted to all container heights by a single hand wheel.

You reduce air pockets and foam to an absolute minimum with the Elgin "Quad" bottom fill. The "Quad" is a proven success with light or heavy packs—is easy to clean—and earns its versatile way with trouble-free deliveries.

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WHIPPET MARKER®!

Industrial's WHIPPET Marker is the answer to fast, economical in-plant imprinting of bags, cartons, boxes, rolls, cans and the like. Friction motivated, it takes speed from and is controlled by your conveyor line operation. You mark containers as you use them, during production runs. Self inking, and using easily interchanged rubber type, the WHIPPET is solidly built to give years of trouble-free service. Easily installed out of the way on your present production line, it will quickly repay its original cost in extra savings and performance.

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other INDUSTRIAL units include:

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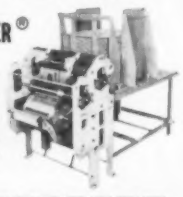
—for automatically imprinting cartons and multiwall bags at production speeds up to 3,000 per hour.



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— for automatically marking any material that takes hot dye transfer impressions.

SPECIALS — Our Specialty. We make and supply all types of special marking equipment, custom designed and built for your individual needs.

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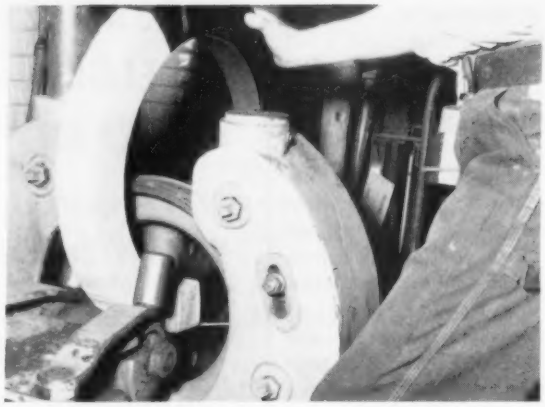
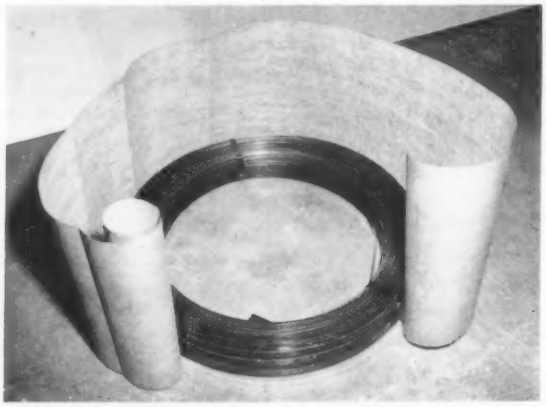
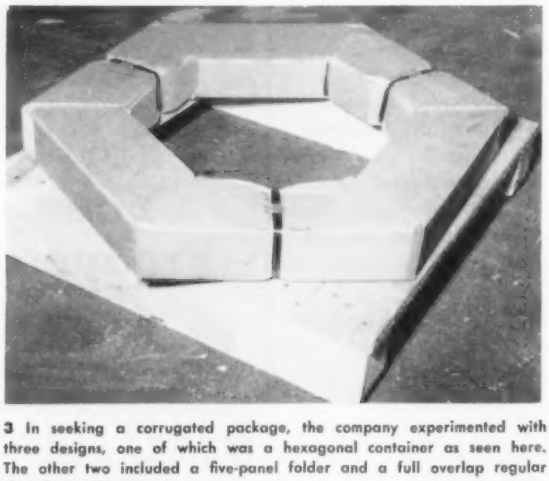


1 Because branches do not have wrapping equipment such as this, it was necessary for Signode to devise some other way of packaging small quantities of its steel strapping coils. Individual coils weigh 85 to 100 pounds each and are small in proportion to their weight.



2 Early experimentation with new packaging forms for the individual coils focused on the use of paper (reinforced and otherwise), including polyethylene combinations and paper laminations. The need for new machinery and/or stepped-up labor costs resulted in their being eliminated.



3 In seeking a corrugated package, the company experimented with three designs, one of which was a hexagonal container as seen here. The other two included a five-panel folder and a full overlap regular slotted container.

6-inch drop on flat side
Vibration on edge
Vibration on face (flat) side
Impact on flat and side at 5, 6, and 7 miles per hour

In carrying out these tests, we set our vibrator to give one G vibration an hour on the side and on the flat. This one G per hour standard is approximately comparable to the National Safe Transit requirement. For impact testing we used our own inclined tester. Incidentally, this tester levels out prior to impact. It simulates the moment of impact while riding parallel to the floor.

From these tests we determined that 350- and 500-pound test corrugated board proved most satisfactory. Our next step was to undertake a series of field tests to confirm or disprove what we established in the laboratory. We made round-trip shipments to 20 destinations. Upon arrival, each package was opened, it and its contents photographed, the components reassembled and repackaged, and shipped back to the laboratory for evaluation.

Value Of Test Shipments

These shipments ranged from a 250-mile round-trip to one of 3,000 miles. They proved the practicality of the packaging we worked out in our laboratory. Although the 350-pound test board proved reasonably satisfactory, we found in the long run much less damage with the 500-pound test board.

We feel the use of test shipments is extremely important and especially so in the case of a relatively heavy item such as a coil of steel strapping. No laboratory can simulate the actual shipping experience, even though the lab tests do give a reasonably accurate indication of performance.

Our final selection of the full overlap regular slotted container hinged to a large extent on its ease of use in our plant and hence in the various branches and warehouses where these small shipments would be made up. It is necessary only to slide the coil into the box, close it, and secure it with four $\frac{3}{8}$ x .015 steel straps. No other equipment is required and labor is reduced to a minimum. For

Stop sticking in heat sealers...

with SLIPICONE
SILICONE RELEASE AGENT

heat stable — easy-to-use

Here's a sure way to keep sticky materials from "gumming-up" packaging and labeling operations. Just apply *Slipicone* to your equipment. Films, waxes, adhesives and other packaging materials just won't stick to it!

Slipicone saves you money! Packaging equipment stays cleaner, more sanitary . . . cuts your maintenance costs. In heat-sealing, Slipicone prevents the pile-up, browning and ink smear that can ruin package appearance.

Spray or wipe it on: Available in 12 oz. aerosol bombs; 2 & 8 oz. tubes; 10 lb. cans. Try Slipicone now. Write for list of distributors.

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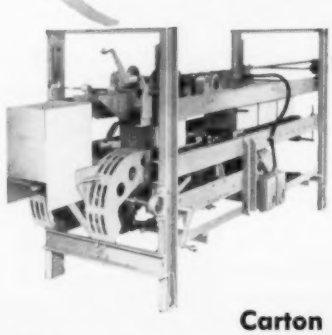
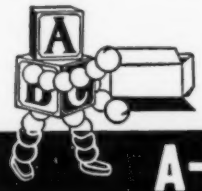


Brings new efficiency to cramped packaging quarters. Fast, automatic, trouble - free. Carton jamming virtually eliminated. Three semi-automatic models fit most case sizes. Write today for details—floor plans and specs.



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"IT" IS POLYFLEX...

A series of unusual plastic sheet and film materials from which imaginative people are making a great variety of profit-making packages and products. Here's what ***POLYFLEX*** is like.

IT'S TOUGH...

And formable by vacuum or trapped-sheet methods. It has a "snappy" feel that reminds you more of tempered metal than plastic.

IT SPARKLES...

With the visual appeal of a sunlit brook. Its crystal clarity gives exciting brilliance to the products it safeguards.

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To create mirror-like — or antiqued — effects of gold, copper or silver.

IT'S COMPLETELY NON-TOXIC...

Safe in direct contact with foods. And greaseproof, of course.

IT'S REALLY DIMENSIONALLY STABLE...

All the way from —50°F. to 180°F. and it does not absorb moisture.

IT'S ECONOMICAL...

Costs less per thousand square inches than other plastic sheetings that lack its versatility. Further economies can be had because ***POLYFLEX'S*** high strength permits the use of lighter gauges to get desired physical requirements. All types of ***POLYFLEX*** are available in gauges from .001" to .020", in roll widths of 21" and 42".

Why not get acquainted now with ***POLYFLEX'S*** many advantages. Write us — and we'll be glad to send samples, properties charts and to work with you to turn your ideas into profits.

POLYFLEX® *by*

PLAX

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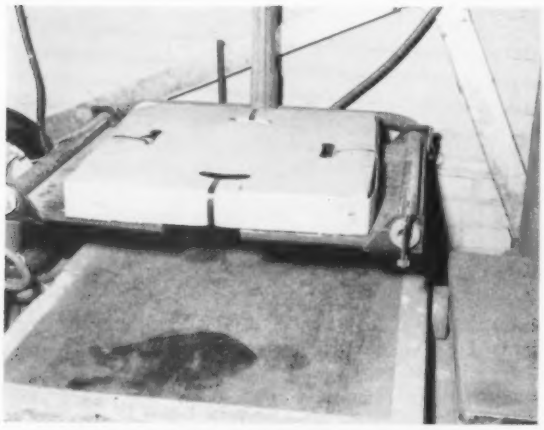
4 Although superseded by a regular slotted container, this five-panel folder stood up very well under Signode's tests — as seen here. Note the absence of damage or disarrangement of the steel strapping.



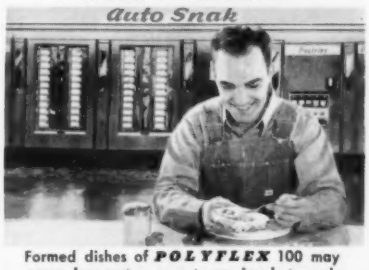
5 Illustrative of the battery of package testing used by Signode is this drop test. Here a regular slotted container, bound and containing a coil of strapping, is about to be dropped.

6 Signode's own inclined tester is designed to level out prior to impact and simulates the moment of impact while riding parallel to the floor. This permits the use of the vertical surface of the wall as a backstop.

Want some proof, eh?

Well, here are a few of the profitable ideas that have been sparked by ***POLYFLEX*** ® film and sheeting.

FROZEN — THEN HEATED



Formed dishes of ***POLYFLEX*** 100 may prove low cost answer to serving hot meals from vending machines. ***POLYFLEX*** plates take quick-freeze storage and stay sealed in hot water compartment (150°) F.

SCINTILLATING BLISTERS

Packages like these become a sparkling display unit, when brilliantly clear ***POLYFLEX*** is formed into a blister—low cost way to glamorize a combination offer.

Yes, ***POLYFLEX*** sparks ideas. Its unusual properties — its low cost — will surprise you. Why not write now for samples, data.

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CHANGES
1. ORIG. 11/20/56 NE
2. REVISED & REDRAWN 5/21/57 NE

SIGNODE CONTAINER AND PACKING SPECIFICATIONS | SPECIFICATION NO. 1742

TYPE OF PACKAGE FIBRE BOX - CORRUGATED

FOR SINGLE COIL OF SIGNODE COATED APEX STRAPPING ONLY

CONTAINER SPECIFICATION:

INSIDE DIMENSIONS:

LENGTH(L) 22-3/8"

WIDTH(W) 22-1/4"

DEPTH(D) 2-5/8"

INSIDE CUBE 1268 CU. IN.

Special die cut; five (5) panel folder.

MINIMUM REQUIREMENTS:

1. 500 lbs., Mullen Test - double face "B" flute - corrugated board, double stitched manufacturer's joint.
2. Liner stock - 96#/M sq.ft. (500 sheets - 24" x 36") basis weight combined weight 192#. Natural Cylinder Kraft.
3. Corrugating - medium - .009 caliper (500 sheets - 24" x 36") basis weight 26#/M sq.ft. Kraft or Chem-Fibre.
4. All score lines shall be fabricated in such a manner that all flaps may be bent back at the score lines at 180° - five (5) times without fracturing the liners.

PRINTING PLATES:

Plate No. 41-A (P-4123) position on 315° angle - 9-1/2" from center of panel. COLOR: RED - I.P.I. 514-55E-13290.

Plate No. 41-B (P-4124) position on 45° angle - 9-3/4" from center of panel. COLOR: BLUE - I.P.I. 204-55E-13291.

Plate No. 53 (P-4154) blow up to 8" diameter and place in center of panel. COLOR: RED - I.P.I. 514-55E-13290.

Solid diameter line of 16" diameter; 1/8" thick. COLOR: RED - I.P.I. 514-55E-13290.

Rectangles: 1/8" wide, 2" x 4" - position 315° angle; 9-3/4" from center and on side panel - 2" from bottom edge and 1/2" from right side. COLOR: BLUE - I.P.I. 204-55E-13291.

Manufacturer's certificate - centered on bottom outer flap. COLOR: BLUE - I.P.I. 204-55E-13291

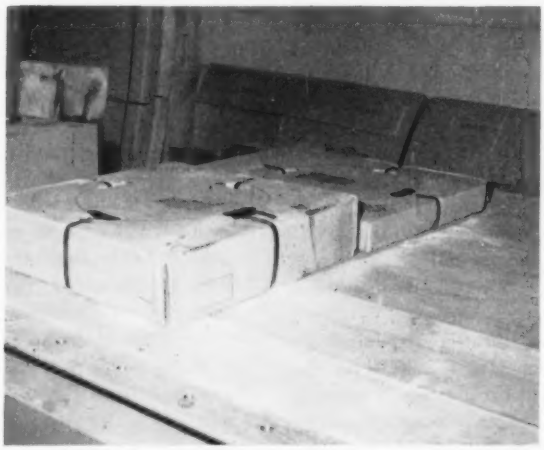
Part No. P-1742 (not more than 1/4" high) centered on right side of manufacturer's certificate. COLOR: BLUE - I.P.I. 204-55E-13291.

(C O N T I N U E D)

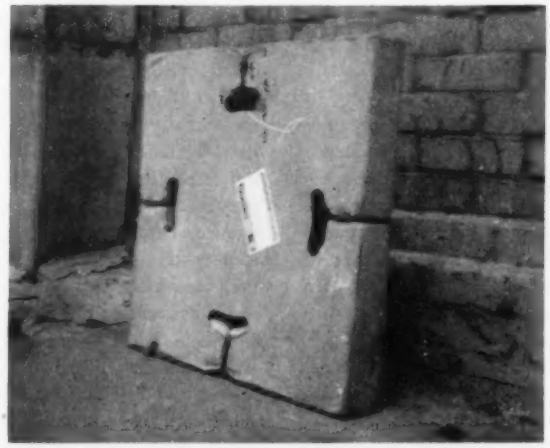
SPECIFICATION DEPT.		FACTORY DEPT.	SALES DEPT.	DATE	SIGNODE STEEL STRAPPING CO. 2600 N. Western Ave., Chicago, Ill.
NE	EK			5/21/57	

Illustrative of the care going into Signode's revised packaging specifications, this sheet (page one) enumerates structural, functional, and printing details. Other pages of the spec include a drawing, additional test requirements, and packing and shipping instructions.

7 Another phase of the testing program was use of this vibrator. Signode found 350- and 500-pound test corrugated board most satisfactory for this packaging.



8 At the conclusion of all the testing, the package survived as seen here. Following laboratory experimentation, Signode developed a series of test shipments.



9 This package reached its destination after making the farthest of 20 trips used in the test shipment program. This package has traveled approximately 1,500 miles.

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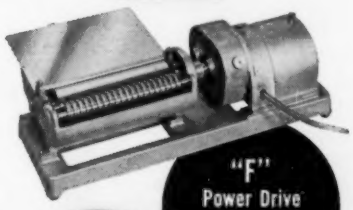

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A fine, dependable, low-priced unit.

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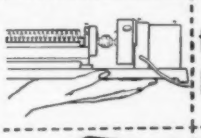
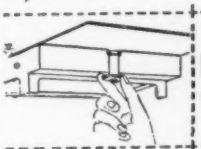
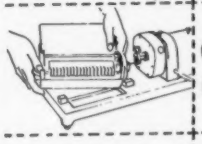


true portability



positive control



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Some of the many ELLISCO Seamless Cans available are shown. They are **light weight, made of one piece, unbreakable**—ideal for packaging many products, for laboratory use and for handling and storing small parts. Capacities: 1/16 oz. to 16 oz. Also many sizes and styles of seamed cans available. Write, wire or call us with your can packaging problem. Ask for Bulletin 116.

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this reason we rejected the five-panel folder-an otherwise acceptable package. The coil had to be placed in the folder, then folded over, its sides folded in, and then stapled on three sides of the container. Except for this excessive amount of labor, the five-panel folder was very successful and withstood all tests. However, we rejected it because of the man-minutes involved.

Draw Up Specification

Another important step in our project was the establishing of a formal specification for the new package. We prepared this on a three phase basis. Phase one consists of three sheets that describe technically the pertinent information of the package, including the weight of board, scoring, printing, manufacturer's joint, and similar data necessary for vendor requirements.

Phase two (the fourth sheet of the spec) describes the detailed method of packaging, including specific information about stenciling and shipping. Phase three (sheet five) contains a photographic step-by-step procedure showing the recommended method of packaging.

Obviously we were governed by the requirements of Rule 41 of the Consolidated Freight classification as applicable to this package. However, the rule does not furnish the combined facings of board necessary for a 500-pound test board such as we used. We are grateful to our suppliers for their help in making this and related determinations.

Check Branch Facilities

At this point we turned our attention to providing for the installation and use of the new package in our various branches. We found it extremely important to analyze the equipment and facilities at each, both from a standpoint from what they had and what they would need to use the new packaging.

Points we considered included these: (1) Supplies and tools necessary for each branch; (2) table top facilities; (3) the particular branches involved; (4) coordination with our system of records, including check numbers on our IBM lists; (5) provision for a minimum of 50 containers for each branch; (6) providing a maximum 60-day supply for each; (7) a detailed memorandum to branches explaining the new packaging program; (8) arrangements for the sales department to handle pertinent correspondence, and (9) the release of a bulletin officially establishing the new package.

We made a recap of 30-day shipments to the different branches. We considered it very important to have correct and adequate information about each before launching the new package use. We think it is essential to avoid overstocking a branch and we arranged to furnish each a 60-day supply. We based this on the needs of each. At the same time we sent each branch a minimum of 50 containers at the start.

We had to remember that this packaging program is for the convenience of small lot users. As a result, it represents just a fraction of the total volume handled at each branch. We think it is very helpful to take the care necessary to establish the specific needs of each brand, rather than arbitrarily assigning a given volume of packages to each.

Launch New Package Use

The next significant step, after getting approval from sales management and from executive production control, was to issue a bulletin describing the new method of packaging. This officially notified each warehouse and manufacturing plant of the details. Similarly, each received a copy of our detailed specification. Incidentally the three-page bulletin itself includes a list of nine operational details in making the change of packaging and also shows a sequence of four photos illustrating the step-by-step procedure in using the new box.

The advantage of a bulletin such as this is that it assures the uniformity of method to the various warehouses and distribution points around the country handling our new packaging. Similarly, it furnishes the interested parties some background information on the development of the

new package. In this way everyone has a better understanding of it than would be the case if the packaging went into use with no bulletin being issued.

Pressure filling of viscous products

(Continued from Page 28)

follow in overcoming these various types of trouble.

For example, if the material is not filling into bottles, the first thing to do is to check the reading on the working pressure gauge. At this point the crew must stop the machine, operate the hand electrical switch, and recheck the working pressure gauge reading if the arrow does not climb to the required position. They may have to readjust the spanner nuts until the arrow points to the designated area.

In other situations where the material is not filling bottles, upon checking the gauge they may find the arrow beyond the designated setting. If so, they must stop the machine, purge the pressure line by opening the valves of the blow-down adjustment, then try the machine again by turning on the hand electrical switch. If the gauge still exceeds the designated number, they should check the surge tank or pump as the material is not being delivered to the filler.

Variation of filling may indicate by means of the line pressure gauge that there is high pressure in the lines. It may be that material is being delivered too rapidly to the filling nozzles. A readjustment of the working pressure gauge may be necessary. The attendants should turn the spanner nuts up. Then the gauge reading will drop, throttling the Powers Flow-rite valve.

If the excessive pressure still persists, the pump is running too fast. The remedy for this is to slow the pump down by degrees until properly set to fill bottles without pressure. On the other hand, if the flow is too slow they should readjust the spanner nuts down to return the gauge reading to the original setting. Excessive carry-over of material suggests that bottles are filling one-fourth cycle. Those running the machine should slow down the pump by degrees until bottles fill three-fourths cycle of the machine, or they should readjust the spanner nuts up to throttle the valve to slow the flow of material into bottles.

If there is insufficient flow from the surge tank, the heaters on the pump should be checked and reset if necessary. As well, the readings on the pressure relief regulator should be checked and it be determined that the proper settings are within the designated mark.

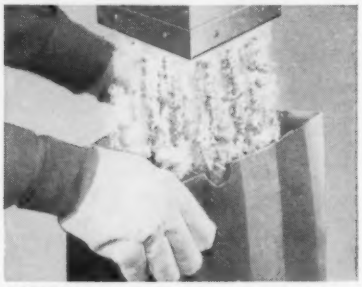
The basic problem was that the rate of filling was variable due to the variable viscosity of the material. (The material viscosity varies due to temperature of manufacture, age, slight variations in raw materials. The material, after a given period of time, regardless of its initial viscosity, develops a standard viscosity at which it is marketed). In order to use the material immediately upon manufacture (when the viscosity is the highest), it had to have a definite positive pressure in order to produce flow rates in the filler nozzles high enough to keep up with the line speed.

The viscosity of the material determines the working pressure required to operate the filler satisfactorily. The reason for this is that the pressure drop across the control valve is directly proportional to both the velocity and the viscosity and inversely proportional to the square of the opening size of the valve. By careful selection of the characteristics of the control valve (see curve), an almost linear relationship between the pressure drop and the required working pressure for a given viscosity is maintained. In other words, the fill takes place automatically within the normal range of viscosity changes of the product and also to the demand of the filler.

The sensitivity of the pilot (or sensing valve) is such as to produce large output changes for very small increments of sensing pressure. The Leslie valve selected is sensitive to approximately one hundredth of a pound per square inch and will produce a full signal output at ¼ lb. per square inch change.

Ingenuity pays off

PAPER BAGS SAVING MONEY IN MANY INDUSTRIES



STEEL—

Sometimes called a shot bag. Used in the production of high grade carbon steel. Filled with flux powder consisting of manganese and other ingredients. Thrown, contents and all, into a steel furnace, adding necessary ingredients to the molten steel.

MAGAZINES—

Comic books are sent by printer in bags instead of paper-wrapped packages. Saves time, handling.

NAILS and SIDING—

Perfect "piggy-back" package. Small bags, right, are first filled with face nails, then stapled closed. Next, 57 3″ x 12″ strips of asbestos-cement siding are inserted in long, narrow bag. One filled bag of nails is placed on top and complete unit stapled

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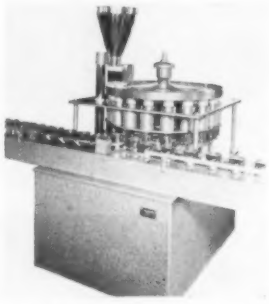
Rotary Filler

Frazier & Son announce the development of a high-speed rotary filler which can fill containers with powdery products at speeds up to 300/min. This new Whiz-Packer unit has an effective dust control, Frazier says,



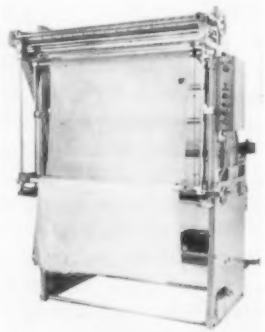
and it handles various types of containers, including canisters, cans, jars, and plastic dispensers. Fully automatic, it requires no operator. A special trip device provides for "no container — no fill." The machine has a ½ h. p. motor, sealed bearings, and is 40″ wide, 48″ deep, and 72″ high. The average conveyor length supplied is 10′. Circle No. 1.

Foil Packaging

Dobeckmun Co. has developed a foil packaging paper for cake mixes, cereals, and other dry, powdered products. This new packaging consists of bleached sulfite paper mounted to foil with rough surface polyethylene extruded on the foil surface. The polyethylene is specially treated so that paper to polyethylene glue seals can be made on the sides and bottom, and heat sealed on top. The bond of the glue seal is enough to produce paper fibre tearing. This foil packaging offers a high degree of protection from moisture and from insect infestation, Dobeckmun says. Circle No. 2.

Drum Liner Machine

Conapac Corp. announces the Walgan Drumliner, a fully automatic machine for manufacturing drum liners from polyethylene tubing. This machine ranges in size from 24″ to 75″ long and up to 40″ wide. It can produce 10 to 25 bags/min. depending on gauge, bag length, and nature of film. The Drumliner machine handles tubing up to 40″ wide and can produce bags up to 75″ long. From unwind to finished delivery stack, all functions of sealing, cutting, and stacking are completely and automatically controlled. The Drumliner will substantially reduce production costs of polyethylene drum liners, Conapac predicts. Circle No. 3.

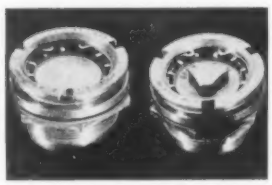


Pre-Flocked Plastic Sheet

Gilman Brothers Co. has developed Stylour, a pre-flocked plastic sheet for vacuum forming or trim use. It is produced from super high-impact styrene sheet coated with cotton or rayon flock. This pre-flocked plastic sheet retains its flexibility after being vacuum formed. The flocked sheet forms in practically the same cycle as the unflocked sheet. Available in 26 standard colors, Stylour may also be ordered in custom colors. It is supplied to the vacuum former in rolls or sheets in widths from 24″ to 40″ and in lengths up to 100 yds. Thicknesses range from 10 to 30 mils in rolls and from 10 to 125 mils in rigid sheets. Circle No. 4.

Breather Valve

Arizona Gear & Mfg. Co. has developed a low pressure breather valve,



TA500 VRH, for dehumidified military storage. Coupled with the use of desiccants, the use of these low-pressure, high-flow pressure and vacuum relief valves permits the design of lightweight containers with controlled breathing. Used in pairs, one inlet and one outlet valve, these TA-500 valves maintain a pressure of —1 to +1 psig inside the container and are ported for a high flow when open. Corrosion resistant materials are used throughout and Silicone rubber is used for the special convoluted diaphragms and seals to assure long shelf life. Circle No. 5.

Polyethylene Antioxidant

Monsanto Chemical Co. announces Santonox, a non-staining antioxidant for polyethylene plastic which has been accepted by the Food and Drug Administration as safe to use in high-

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to be the best . . ."

. . . says **A. L. Green,** Vice President and General Sales Manager of **Jekyll Island Packing Co., Brunswick, Georgia**

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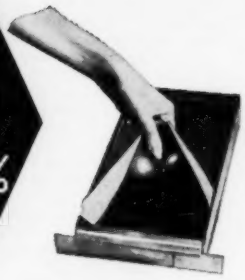

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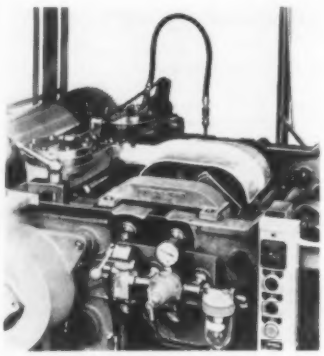
For more information circle No. 253 on Card

pressure polyethylene films for food packaging. Santonox protects both high-pressure and low-pressure polyethylene against the degrading effects of heat processing, even in concentrations as low as 50 parts/million of plastic. By adding an antioxidant, the plastic's flexibility and tensile properties are stabilized during its heat exposure so that these properties remain in the finished product. The Pharmacology Division of the FDA has accepted concentrations of Santonox up to .05% by weight in high-pressure polyethylene for food packaging. Circle No. 6.

Pneumatic Feed Rollers

Potdevin Machine Co. has developed pneumatic feed rollers for the positive feeding of paper into Potdevin



bag making machines. These rollers are particularly advantageous in the feeding of paper rolls that have caliper variations, Potdevin says. Feed roller pressure remains constant because compensation for varying paper thickness is automatic. To determine the best pressure needed for a particular weight paper, a lever setting to pressures up to 160 lbs. is used. Any pressure selected registers on a pressure gauge and is distributed evenly over the feed rollers. Circle No. 7.

Flange Bender

Tronomatic Machine Mfg. Corp. announces the Tronomatic 180 degree flange bender, which uses blisters attached together on end. Strings up to 30″ long are easily folded. One flange of the string is folded with each cycle of the machine, which cycles 8 to 12 times/min. depending upon material thickness. The machine can also accommodate single blisters and will fold any number that can be accommodated in the 30″ length of fold. The machine is air operated, electrically controlled by two hand safety control buttons. Blisters 2½″ deep, 30″ long, and 12″ wide can be folded. Circle No. 8.

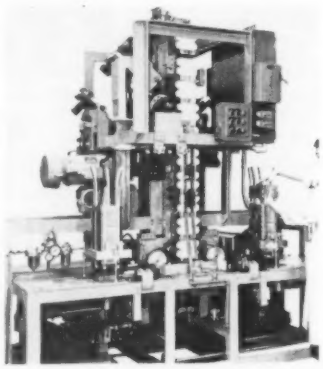
Carton Bottom Stapler

International Staple & Machine Co. has a new stapling machine designed for the bottom stapling of cartons before they are filled with merchandise. This machine, the International Bottom Boxer, features a foot pedal which activates the stapling head. The stapling head pivots on the rear mounting post. The foot pedal is ad-

justable in height for the operator's most convenient operating height. Another major feature is the extra-large magazine capacity for holding 200 staples. It will accept ½″, ⅝″, or ¾″ leg staples without any changes. The machine has a throat depth of 27″ and a throat width of 14″. It is also available with an air-activated stapling head, activated by a foot-operated valve trip. Circle No. 9.

Can Loader

Container Corp. of America announces the High Speed Can Band Juice Loader, which loads frozen



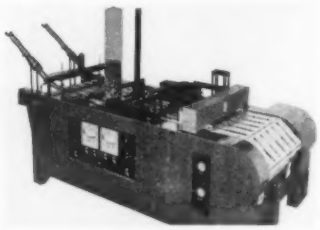
juice into six-unit multiple packages at the rate of 1200 cans/min. The machine loads the output of two canning lines, each of which normally fills 450 to 550 cans/min., Container Corp. says. This machine requires one operator. It is 7′ wide, 8′ high, and 3′10″ long. The basic principles of the machine can be adapted to package other standard food cans, Container Corp. says. Circle No. 10.

Gummed Paper Tape

Crown Zellerbach Corp. has introduced Micro Pliable Flash-Tite, a gummed paper tape which can be molded like wet cloth. This tape has a glue film which is diagonally broken to form thousands of microscopic channels to speed water flow and give more pliability. Tiny glue fractures are formed by micro-diagonal breaking and relax surface tension so that the problem of end-curl is eliminated. A new formula glue speeds initial tack, yet retains stickiness for long periods, Crown Zellerbach says. Circle No. 11.

Bubble Packaging Machinery

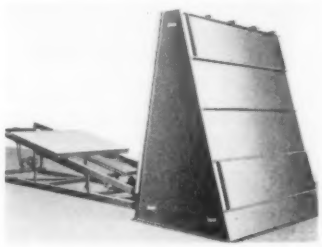
Packaging Industries Ltd., Inc., announces the development of the Sentinel Blisto-Matic model, which uses



a pre-formed blister made of polyethylene, acetate, butyrate, vinyls, etc., and automatically fills them, places a printed coated board on top, heat seals, and automatically ejects them at speeds from 150 to 200/min. As many as six different blisters, each containing a different product, may be packaged at the same time, Packaging Industries says. In addition, two different types of blister materials, each having its own heat sealing cycles, may be used at the same time. Packaging Industries expects to have attachments for these units to accommodate a film top rather than a boxboard top. Circle No. 12.

Conbur Tester

L.A.B. Corp. has developed a new 1000-lb. conbur tester with a ballasted barrier which absorbs a large portion



of impact shocks yet does not interfere with testing efficiency. This tester is designed for use where objectionable transmission of shock and vibration to floors and surrounding machinery prevents the use of usual conbur testers. The barrier is filled, after installation of the machine, with 10,000 lbs. of sand, gravel, or other loose, heavy material which can be easily removed if necessary to relocate the machine. The testing mechanism is identical with standard L.A.B. conbur testers. Circle No. 13.

Industry literature available free

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Packaging Machinery

Stokes & Smith Co. offers Bulletin P-806, which describes a variety of its packaging machinery. Pictures and specifications for this equipment are listed, including data on pillow and fin-seal package making and filling machines, a filler for granules, powders, or pastes, a carton maker-liner-filler, a carton filling and sealing machine, and a Stretchrap packaging machine which contour wraps irregularly-shaped products in Pliofilm. Circle No. **101.**

Label Dispensers

Avery Adhesive Label Corp. offers an illustrated bulletin which provides specifications for four models of its pressure-sensitive label and heat seal label dispensers, available in electrically-operated or manual styles. Circle No. **102.**

Pilfer-Proof Tape

Nashua Package Sealing Div. of Nashua Corp. explains the advantages of Itstix printed gummed paper tape in a current brochure. Available with individual company names or messages printed on it, this tape enables customers to know immediately whether or not it has been broken. Circle No. **103.**

Label Code Numbering

New Jersey Machine Corp. has an information sheet describing its Code-O-Matic manually operated, automatic bench type imprinting device that can code number 15,000 labels in 1½ hrs. Using Gothic 6 pt. type, this unit handles rectangular labels 1″ x 2″ up to 6″ x 8″, imprinting any part of the label up to ⅛″ of label edge. Circle No. **104.**

Case Marking and Taping

Marsh Stencil Machine Co. Products Folder-57 illustrates and describes its marking and stenciling equipment. Stenciling machine is available in hand-operated or electrically-operated models that cut letters ¼″, ½″, ¾″, and 1″ in height. Fountain stencil brushes are reviewed as well as a wide variety of inks. Two electric tape dispensers are described. Circle No. **105.**

Bundling in Cellophane

Olin Mathieson Chemical Corp., Film Div., offers an interesting bulletin which outlines the many cost savings made possible by bundling multiple packages in cellophane. Suggested basic bundling arrangements are for different shaped packages such as tall, flat, long, round, and irregularly-shaped objects. An estimate work sheet that can be used to compare present costs with the cost of bundling is provided. After the necessary basic information is filled in, Olin Mathieson will prepare the cost estimate comparison for you. Circle No. **106.**

Case Sealers

National Equipment Corp., Packaging Div., has an illustrated specification sheet listing the advantages of two different models of short case sealers. These machines feature a gravity glue feed and fully enclosed glue valve applicators. Units automatically and simultaneously seal the top and bottom flaps, or the top flaps and bottom flaps only, without disturbing the contents of the case. Case sizes handled range from 4″ to 18″ high, 6″ to 18″ wide, and 8″ to 30″ long. Circle No. **107.**

Can Marking Machine

Markem Machine Co. has an information data sheet No. 70AF which gives specifications for a marking machine designed for imprinting variables such as color, name, or number, batch control, etc., on lithographed or pre-printed cans. This unit is quickly adjusted for marking cans in sizes ranging from 1/32 of a gal. to 1 gal. within a speed range of 400 to 1500/hr. Maximum imprint area: 2″ high x 6″ long. Machine is mounted on rubber casters. Circle No. **108.**

Self-Sealing Barrier Material

Mid-States Gummed Paper Co. has a technical data bulletin on Green Core Super Cloth Rap. This is a greaseproof, waterproof, flexible, self-adhering barrier material consisting of cloth, greaseproof film, and compounded micro-crystalline wax. It meets MS MIL-B-121A. The results of 11 test specifications for this material are included, concerning high and low temperatures, greaseproofness, waterproofness, bursting strength, chemical properties, etc. Circle No. **109.**

Glassine and Greaseproof Papers

Rhinelander Paper Co. has a sample kit that includes samples of 54 of their glassines, greaseproof papers, and paper specialties. Explanatory copy discusses properties of each sample and suggests end uses for which each sample is best suited. Circle No. **110.**

Carton Filler and Sealer

Triangle Package Machinery Co. offers a brochure giving operating details and specifications for the Flexi-Matic carton filler and sealer. Recommended for plants filling 4,000 or more cartons/day, this machine forms the carton, seals the bottom, fills it, shakes it, seals the top, and passes it through a compression dryer. A pamphlet inserter is available as optional equipment. This unit is equipped with net weighing scales or can be furnished with auger or volumetric feed. Circle No. **111.**

Filling, Packing and Weighing Machine

Arenco Machine Co., Inc., has a four-page general catalog which briefly describes 17 models of its machines. They include tube fillers and closers, jar and bottle fillers, paste and ice cream fillers, bag packers, closers and sealers, carton and bag makers, bottom gluers, case sealers, check weighers, net weighers, and tablet packaging machines. Circle No. **112.**

Band Type Heat Sealer

Ralph Chaffee & Co. has an illustrated brochure describing its Rotor-Sealer. Used in heat sealing thermoplastic materials through a heated metal band, this machine is available in three models. It features forced water cooling, a thermostat range to 600° F., and operates at speeds up to 315″/min. Sealing widths available are ⅛″, ½″ and ¾″. Circle No. **113.**

Multiwall Bag Closures

International Paper Co., Bagpak Div., offers an interesting brochure which demonstrates actual bag end samples of its Cushion-Stitch closure for multiwall paper bags. It is comprised of a twisted kraft paper reinforcing cord that lays across the end of the bag; thread is then stitched around the cord and through the bag. The kraft paper cord forms a cushion that absorbs the strain of handling or dropping and prevents the stitching from pulling through the bag walls. Circle No. **114.**

Self-Sticking Strapping Tape

The Johns-Manville, Dutch Brand Div.,

manufactures a vinyl back nament reinforced strapping tape No. 400. Available in seven widths from ¼" to 1", it resists wear and abrasion, is waterproof, rustproof, oil and greaseproof. A current data sheet lists specifications for this tape including adhesion, impact resistance, tensile strength, elongation, moisture vapor transmission, etc. Circle No. **115.**

Incline Package Conveyor Belt

B. F. Goodrich Industrial Products Co. has released a new catalog section No. 2550-A which provides photographs and explanation of how the Griptite conveyor belt can handle a varying range of package weights on an incline or decline conveyor operating at a maximum angle of 45°. This belt features ¼" high crossbelt rubber ribs to provide surface friction. Located every 18" along the belt is a ⅜" high rib which serves to prevent very lightweight packages from slipping. The belt is self-cleaning. Circle No. **116.**

Hot Melt Coatings

Boler Petroleum Co. offers a folder describing Nicolmelt Molten Coatings. These coatings and laminants eliminate the need for solvents; they are applied on paper the same way as wax. No drying ovens or heaters are required; they set-up solid immediately upon cooling and high gloss is developed by running the web over a chill roll. A list of 20 packaging applications is provided which includes breadwrappers, folding cartons, paper bags, bakery trays and boards, laminations, etc. Circle No. **117.**

Bottle Fillers and Cleaners

The Karl Kiefer Machine Co. manufactures a broad line of vacuum and pressure filling machines, bottle air cleaners, and rinsers. Handling a wide variety of container sizes and filling liquid and viscous products, twelve models of these machines are described in an illustrated brochure. Circle No. **118.**

Packaging Adhesives

Swift & Co. has prepared a handy booklet outlining the wide variety of adhesives this company offers the packaging field. Brief descriptions of different packaging applications are provided which include top and bottom case sealing, tight wrapping, multiple unit packaging, folding cartons, set-up boxes, glass and can labeling, tube winding, laminating, bag manufacture and bag closure. Circle No. **119.**

13-Gallon Polyethylene Drums

Plax Corp. offers descriptive literature giving prices and specifications for its new line of polyethylene drums with a nominal capacity of 13 gals. They stack easily, are inert to most chemicals, and are light in weight. They feature ease of handling with handles on the top and easy pouring through a specially designed spout. These drums are available in a minimum quantity of four, the number shipped in one carton. Circle No. **120.**

Polyethylene Tubes, Bottles, and Cans

The Bradley Container Corp. publishes an illustrated newsletter called Bracon Briefs. The current issue reviews new applications for this company's line of squeeze-to-use tubes, bottles, and cans. These packages are being used for drugs, cosmetics, household chemicals, automotive products, foods, etc. A section of this paper deals with the technical problems of filling and sealing these packages and tables are provided which list capacities, diameters, and lengths. Circle No. **121.**

Siphon Filler

U.S. Bottlers Machinery Co. Bulletin 120149 gives specifications for and reviews operating principle of its Siphon Filler. The slow filling flow rate of the siphon principle together with stainless steel filling tubes adapts this machine to the handling of low viscosity liquids at a high production rate. It is particularly adapted for filling foamy products and products that do not permit agitation. This filling principle eliminates the need for pumps and motors yet the unit can handle up to 30 containers/min. Circle No. **122.**

Heat Sealing Machines

Globe Heat-Seal, Inc., has a product folder that illustrates and gives specifications for five different models of jaw-type heat-sealing machines. There is a machine for sealing and saddle-labeling, a foot operated sealer, and a portable barrier material sealer which is actuated by air pressure and is used for heavy packaging operations. Circle No. **123.**

Collapsible Tubes

Sun Tube Corp. has published a new brochure which reviews the step-by-step procedures of collapsible tube manufacture from research and development to extrusion, decoration, and packing. A section is included which helps you select the correct size tube for your product, the proper opening and seals for your product, and a capacity chart which lists capacities of each tube size. A page is devoted to a formula for determining the correct size of a tube carton for products to be sold in the U.S.A. Circle No. **124.**

Container Handling Equipment

Island Equipment Corp. Bulletin ST-1 lists specifications for a variety of straight line and rotary unscrambling tables, accumulating tables, lateral curve conveyors, and special purpose conveyors. This booklet is well illustrated with photographs and mechanical drawings and includes a chain conveyor engineering data table as well as a tabulation of coefficients of friction. This equipment is designed to handle bottles, jars, and cans. Circle No. **125.**

Honeycomb Cushioning

Union Bag-Camp Paper Corp., Honeycomb Dept., has a Technical Service Bulletin H-1 which explains the construction, manufacture, and fabrication of honeycomb cushioning material. Available in varying thicknesses, with or without face liners, this material is made of kraft paper strips, spot-laminated in such a way as to produce honeycomb shaped cells as the lamination is expanded. When pressure or shock is applied to the honeycomb facing, the entrapped air within the cells increases the cushioning effect. This material is relatively low in initial cost and is light in weight. Circle No. **126.**

Heat Sealing Crimpers

Wrap-Ade Machine Co., Inc., offers three models of heat sealing crimpers in a current four-page brochure. These units are available in automatic and semi-automatic models for crimping and sealing envelopes or bags of heat-sealable foil, cellophane, and similar materials. They offer a choice of six sealing patterns and additional attachments are available for hole punching, notching, and coding. Circle No. **127.**

Automatic Case Sealer

Crompton & Knowles Packaging Corp., Russell Div., manufactures an automatic case sealing machine that is described in a current four-page bulletin. Featuring rugged construction and quick changeover, this unit glues either top or bottom flaps or both, handling box sizes from 5" to 15" wide, 4" to 15" high, 8" to 20" long. Circle No. **128.**

Glass Vials

Owens-Illinois offers a four-page illustrated bulletin that describes Kimble Opticlear Snap-Cap Vials. Featuring a polyethylene cap that fits on the outside and which can be applied on high-speed equipment, these vials are available in eight sizes ranging from 1 to 12 drams. A specification table is included which

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lists dimensions and packing quantities for each size. Circle No. **129.**

Heat Sealing Equipment

Amsco Packaging Machinery, Inc., manufactures eleven different models of foot-operated bag sealing machines which are described in an illustrated brochure. Seven different sealing surfaces are available in dimensions ranging from 7" long x 1" wide to 22" long x 9/32" wide. These machines are designed for packagers with limited production or as auxiliary machinery in large plants. Circle No. **130.**

Aerosol Packaging

Allied Chemical and Dye Corp., General Chemical Div., has a 16-page brochure that tells how aerosols work and provides technical information on their applications. A table showing the physical properties of seven different grades of propellents is included as well as a list of contract fillers who can package your product in aerosol form for test marketing and commercial production requirements. Circle No. **131.**

Heat Sealing Bag Makers

Simplex Packaging Machinery, Inc., Bulletin SPM-3 provides specifications and photographs for five models of its automatic bag making machines. These units operate with cellophane, heat-sealable films, and laminations, producing single or duplex-wall bags, flat or gusset, from plain or printed stock, with folded bottoms or crimp bottoms. Speeds range from 28 to 100 bags/min. Bag sizes range from 1½" to 17" wide, and 1½" to 20" long. Circle No. **132.**

Molded Closures and Specialties

Armstrong Cork Co., Glass and Closure Div., has published a handsome eight-page catalog showing its line of Armstrong Artmold caps which are specially designed to stand up under the punishment of modern, high-speed lines. Eleven standard colors are available in phenolics, and 19 colors in ureas as indicated on the color chart enclosed. Different grades of stock cap liners are described and photographs of a wide variety of stock and specialty closures for jars and bottles are included. Circle No. **133.**

Thermoplastic Sheet and Film

Chicago Molded Products Corp., Campco Div., offers a handy data file folder that contains price and data sheets on its line of thermoplastic sheet and film. These materials can be easily shaped with male or female dies and can be machined and die-cut readily. They can be bonded together with commercial cements or welded with heat and pressure. They are particularly adapted to blister packaging. Circle No. **134.**

High-Speed Weighing Equipment

ACF Industries, Avion Div., manufactures a series of four units comprising a high-speed weighing system. They include a weighing cell, control relay, package classifier, and a self-taring fill control. This system features accuracy at high speeds. It will net weigh, gross weigh, check weigh, and compensate for tare. Data sheets for each of these units are available which give specifications and discuss operating details. Circle No. **135.**

Vacuum/Gas Pouch Packaging

Standard Packaging Corp., Flex-Vac Div., offers a four-page bulletin on the Model 6-12 vacuum or gas pouch packaging machine. Fully automatic, this unit handles luncheon meats, ham, cheese, dried beef, frozen foods, etc., at speeds up to 60/min. Circle No. **136.**

Polyethylene Resins

U.S. Industrial Chemicals Co. manufactures polyethylene resins under the brand name of Petrothene, which is described in a current illustrated brochure. Explaining how polyethylene is manufactured, its properties, and applications, this booklet includes tables listing polyethylene film permeability properties and the chemical resistance of these resins. Circle No. **137.**

Plastic Bag Heat Sealer

Pack-Rite Machines Bulletin 123A lists specifications and prices for the Poly-Jaw Heat Sealer. This is a foot pedal-operated machine designed for direct sealing of unsupported films, such as polyethylene, Pliofilm, vinyls, etc. Thermostat controls temperature up to 550°F. Sealing bars are available in lengths of 8", 10", 12", and 15". Circle No. **138.**

Bakery Products Wrapper

Hudson-Sharp Machine Co. has a four-page brochure that lists the advantages of the Campbell Wrapper in handling bakery products of every description. Baked goods, whether hard or soft, regularly or irregularly-shaped, can be automatically wrapped without trays, with no breakage, spreading, or crushing. This machine requires one operator and produces packages of single or multiple products per unit at speeds ranging up to 300/min. Circle No. **139.**

Cushioning Material

Armour & Co., Curled Hair Div., has a booklet, "How to Pack for Maximum Instrument Protection," which illustrates application of Hairflex, a rubberized curled hair cushioning material. This material is available in sheets and rolls. It can be die-cut and laminated or molded to the shape of your product. Hairflex is highly resilient, moisture and fungus resistant, and non-abrading. Load compression curves are shown which enable you to determine the thickness of the padding needed to protect your product properly. Circle No. **140.**

Can Making Machines

Callahan Can Machine Co. has issued its General Catalog No. 1 which is profusely illustrated with pictures of different models in a broad line of can making machinery. Specifications for each model are included. Equipment described includes can bodymakers, double end flanging machines, strip feed presses, gang slitters, double edging and notching machines, double seamers, etc. These machines are designed to fabricate metal cans in a wide variety of sizes and shapes. Circle No. **141.**

Automatic Pouch Machine

Bartelt Engineering Co. explains the basic concept of its pouch machine in a brochure, "Machinery For Creative Packaging." Base machine forms a package from film or paper, opens it, and seals it after filling. Many filling and measuring units can be integrated with this equipment, on one drive shaft. Booklet illustrates adaptations of this machine for packaging both dry and liquid products. Circle No. **142.**

Packaging Consultation

Container Laboratories, Inc., has a 16-page illustrated booklet describing its consulting services, research and development, design and engineering, testing, and special studies undertaken. Illustrations show difficult or unusual packages and equipment developed and actual testing operations and methods. A list of clients and the biographical sketches of key personnel are also included. Circle No. **143.**

Conveyor Chains

Chain Belt Co. Bulletin 56-60 is a 26-page catalog profusely illustrated with photographs and mechanical drawings of the Rex conveyor chains. These include steel and nylon tabletop chains, steel platetop chains, crescent top chains, and case conveyor chains. These conveyors handle bottles, cans, jars, and boxes. Conveyor layouts are included as well as engineering and application data in tabular form. Circle No. **144.**

Packaging Machinery Catalog

Wright Machinery Co. describes its diverse line of equipment in a 24-page catalog. Well illustrated, it gives standard specifications for weighers and fillers of dry, free-flowing products for cartons and bags, as well as cracker sandwich wrappers, and a liquor bottle strip stamp machine. Circle No. **145.**

Automatic Capping

Consolidated Packaging Machinery Corp. has a six-page bulletin illustrating and describing eight different models of automatic equipment. Half-tones of actual installations and a list of users accompanies the descriptive text and general machine descriptions. Circle No. **146.**

Pails and Drums

Vulcan Containers, Inc., offers an information sheet illustrating its line of steel pails and drums, with a capacity range of 1 to 12 gal. These containers are available from stock in lined or plain interiors, in a variety of gauges. They are equipped with pouring spouts for both drum and lug cover styles. The company will ship a minimum order of 20 containers. Circle No. **147.**

Straight Line Labeler

Pneumatic Scale Corp., Ltd., Bulletin 116 illustrates its direct transfer bottle and jar labeler. This machine features a suction pad label pick-up that passes a glue applicator and then deposits label on the container. This unit incorporates "no bottle-no label" and "no label-no glue" devices. Circle No. **148.**

Vertical Cartoner

R. A. Jones & Co., Inc., Bulletin CMV-56 illustrates operating sequence of its vertical cartoner. The machine opens cartons, tucks bottoms, moves them through loading station, and tucks tops. One operator can load as many as 75 pieces/min. Two models handle carton sizes ranging from 2½" x ¾" x ½" to 9" x 4¼" x 4¼". Circle No. **149.**

Silicone Spray

Injection Molders Supply Co. offers an interesting twelve-page booklet describing the properties and uses of Silicone Spray. Available in an aerosol package, this spray is used to prevent sticking on hot plates, crimpers, gluers, sealers, etc. It also reduces friction on a packaging line. Circle No. **150.**

Gravity Fillers

Horix Mfg. Co. has a booklet, "Canning For Profit," which illustrates installations of automatic rotary gravity fillers with their specifications. Models feature "no container-no fill" device and have from 6 to 48 valves. This machine will fill hot or cold foods without aeration in cans, jars, bottles, or tumblers. Capacities range from 1 oz. to 5 gals., with a guaranteed accuracy of fill of + or − 1/64". Circle No. **151.**

Plastic Bottles & Jars

Imco Container Corp. has a 24-page catalog showing its line of stock sizes and designs of plastic bottles and jars. Illustrations give capacities which range from ½ oz. to 16 oz. and dimensions of each style of container. Also illustrated are spray and dispenser plugs for blown bottles and fitments for injection molded bottles. Circle No. **152.**

Package Caser

The Canning Machinery Div. of Food Machinery & Chemical Corp. offers a four-page bulletin, No. CMD 601-W, which lists specifications and pictures of the Sure-Way Package Caser. This machine can load rigid or semi-rigid packages into a variety of corrugated case sizes, either top or end loading, at speeds up to 240 packages/min. Circle No. **153.**

Three schools announce package engineering courses

New York University, Rutgers University, and Stevens Institute announce evening courses in packaging. Most of these courses rely largely on outside lecturers — men who are specialists in various areas of packaging. Registration for these courses takes place this month.

New York University's Division of General Education offers a semester course in packaging engineering. Classes will meet on Tuesday evenings from 6:15 to 8:00 p. m. at NYU's Washington Square Center. The course will run from September 24 to January 21. The principal topics discussed in this series will be Protective Design Techniques and Cost Production Studies.

Among the lecturers at New York University will be Allyn C. Beardsell, Container Laboratories, Inc.; Alfred W. Hoffman, Robert Gair Company, Inc.; and Jerome Kipnees, Container Laboratories, Inc.

Complete information on the package engineering course may be obtained from the Division of General Education, New York University, 1 Washington Square North, New York 3, New York.

Program At Rutgers

Rutgers, the state university of New Jersey, announces a special course in industrial packaging. This course is being offered in cooperation with the Eastern Division of the Society of Industrial Packaging and Materials Handling Engineers. It will be held on Wednesday evenings beginning September 18 and ending January 15. Class will meet from 8:10 until 9:50 p.m. at the Newark Center, 33 Washington St., Newark.

Among the topics covered in the discussions will be the relation of physics and chemistry to packaging, selection of packaging materials, cushioning materials, corrugated fibreboard containers, rigid and flexible plastic containers, package testing techniques, export packing, cost and economies of packaging, and a number of other interesting subjects.

The Rutgers industrial packaging course has been designed for those concerned with or actively engaged in the packaging function, whether in research, development, or in production packaging, executives, department heads, and others who must package their products with consideration to cost, protection, and sales appeal.

Further information may be obtained from Mr. John T. Nordling, Extension Associate, Rutgers University, University Extension Division, 33 Washington Street, Newark 2, New Jersey.

Stevens Institute Program

Stevens Institute of Technology announces a 16-week evening course in packaging given by the Industries Training School beginning on September 30 on the Hoboken (New Jersey) campus. The course, entitled Materials Handling and Packaging, offers a survey of modern handling methods. Walter F. Friedman, associated with Container Laboratories, Inc., will again teach the course. Class sessions will be held on Monday nights from 6:50 to 9:20 p.m.

Among the topics to be covered in this course will be palletized shipments, automatic handling systems, carloading carrier regulations, and the design, testing, and use of various types of package units. Several motion pictures will supplement the reading and discussions. In addition, a plant tour will be arranged some time during the term.

For further information and application blanks, write or telephone Mr. L. Edwin Backer, Director of the Industries Training School, Stevens Institute of Technology, Fifth and Hudson Streets, Hoboken, New Jersey. The telephone number is OLdfield 9-7700, Ext. 328.

Future Packaging Courses

Two schools are planning packaging courses for the second semester. The University of Massachusetts will offer a graduate course in Food Packaging beginning in February, 1958. This course will make use of Massachusetts' new food packaging laboratory, which houses packaging equipment and testing apparatus devoted exclusively to the subject of food packaging. For more information, contact Mr. Arthur S. Levine, Professor, Department of Food Technology, University of Massachusetts, Amherst, Massachusetts.

Purdue University is planning to hold a short course in February designed for men who are supervising or working in packaging, packing, shipping and traffic departments, or those who are concerned with purchasing, testing, and otherwise working with packaging materials. Among the areas of instruction will be types and uses of containers, packaging materials, evaluation and testing, materials handling and warehousing, and degradation and deterioration.

The Purdue short course will be held from February 3 to February 14 on the Lafayette (Indiana) campus. More information may be obtained from the Industrial Packaging Short Course, Division of Adult Education, Purdue University, Lafayette, Indiana.

Columbia Drops Course

Columbia University has announced its decision to drop its packaging course this year. This course, offered by the Department of Industrial Engineering, had been one of the most comprehensive of evening courses in the packaging field. No plans for re-instituting this packaging course have been made.

PACKAGE ENGINEERING

has changed

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Our executive and editorial offices are now located at 185 North Wabash Avenue, Chicago 1, Illinois. Our new telephone number is FInancial 6-1440.

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Our classified advertising section is intended for use by those wishing to buy or sell used packaging equipment, to employ packaging personnel, seek such employment, offer or seek business opportunities. It is not available for general advertising. Terms: Cash with order. Rates: Up to 60 words, $10.00. If boxed, $20.00. Up to 120 words, $20.00. If boxed, $40.00. Up to 180 words, $30.00. If boxed, $60.00.

Circulation this issue in excess of 35,000

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Position Available — Packaging machinery engineer for employment in Philadelphia, Pa., as maintenance engineer. State education and experience. Reply to Box 901, Package Engineering, 185 North Wabash Avenue, Chicago 1, Illinois.

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Engineer-Editor Wanted — Engineering, chemical, or other technical background with experience in packaging. Writing ability helpful. Interesting future with our own rapidly growing company. Send education and experience resume, in confidence, to R. Bruce Holmgren, Editor, Package Engineering, 185 North Wabash Avenue, Chicago 1, Illinois.

FOR SALE

For Sale — 2 Karl Kiefer Rotary Air Cleaners. Now set for 8-oz. bottles and 3¼" jars. Model #1 12 stem. These machines in excellent condition, but will sell at substantial discount to move promptly. Make us an offer. Machines may be inspected at any convenient time. Address Box 902, c/o Package Engineering, 185 North Wabash Avenue, Chicago 1, Illinois.

For Sale — Packaging machine, Battle Creek Model BT30 and Bond M L Dual Filler. Fills, seals folding boxes, both bottom and top. Continuous flow principle. Quickly convertible. Wide range of boxes up to 10 inches in height, 30-40 per minute. Price new machine $15,120.00; this used one $5000.00. Reply to W. J. Wittekind Company, 1041 Richmond Street, Cincinnati 3, Ohio.

What we think

In this era of increasing packaging line mechanization, we must remember that the human factor in the packaging operation remains as important as ever. It is timely for us to clarify our understanding of the relationship between men and machines, and to orient ourselves — to avoid getting an unbalanced view of the question.

Although packaging line mechanization is clearly increasing, there is still plenty of work for *people* to do. The most casual tour of the packaging areas of food and pharmaceutical plants known to be show places of their industries reveals unmistakably the importance of individuals to supplement the work of packaging machinery.

As it becomes increasingly opportune to install packaging machinery, some plants overlook the effect of the transition on their packaging line workers. Tending or watching an automatic packaging line requires a far different skill than that associated with manual and semi-automatic packaging work.

Manual dexterity versus machinery observation

One distinguished factory manager points out that a person usually develops either a high degree of manual dexterity or a knack for physically passive but mentally alert packaging line supervision. He wonders whether the training of one's physical senses to detect the slightest deviation in an automatic operation impairs the development or retention of manual dexterity for hand and semi-automatic packaging work.

His query is a good one. A person skilled at sitting along side a packaging line hour after hour (assuming, of course, normal rotation and rest periods) without losing his or her antenna-like perception to spot what does not look or sound right is a distinct asset to any plant.

Capable packaging line attendants depend as much on their ears as on their eyes in catching operational variances — and occasionally on their noses. But while their senses function with high efficiency, their hands usually have no tasks beyond pushing a button at the first sign of trouble.

Let's not lose these valuable skills

On the other hand, those doing an outstanding job of manual and semi-automatic packaging work, including the assembly of package components and the feeding of machinery, have developed their nimble fingers at the expense of neglecting their observational alertness. Parenthetically, we stand in awe at the amazing dexterity of some of these ageless, indefatigable women who were assembling packages long before most of us were born — and who still function with speed and ease.

The real problem for a plant in transition is to avoid losing these skills while training its workers to supervise machinery. One solution is to set aside a semi-automatic line for these people to operate while the automatic lines are being changed over. With the increasing appearance of specialty products and new developments in almost every field, it is important to retain a realistic view of packaging line operations. Long run, high volume work is not as abundant as is commonly believed. Most plants would like a lot more of it.

Why not use them as inspectors?

Sometimes the older workers tend to resist the transition from manual dexterity to the passive supervision of high speed (and sometimes noisy) machinery. In this connection, we think it important that the trend to mechanized operation does not become packaging dexterity's *Gotterdammerung*, that is, a twilight of the gods.

Plant after plant is finding that it needs the nimble fingers of these highly skilled workers just as much as ever. It often happens that they become ideal inspectors of finished work at the end of an automatic line.

Transition: From hands to eyes and ears

Plants that can retain the skills of their manual packagers while developing them into machinery attendants should do so. For example, it may be possible to introduce a manual skill action at a "stop" or transfer point on an automatic line. Our need of manual skill is more widespread than many people believe.

Anyone doubting this should visit 25 or 30 plants selected at random. The experience will be most rewarding and will emphasize the need of retaining the skill of these package-quality conscious workers while mechanizing a plant and while developing watchful attendants and alert supervisors. And even the most highly mechanized plant needs a semi-automatic line or two. It absorbs the skills of mature workers and provides a temporary workplace for whole crews while automatic lines are changed over.

Bruce Holmgren

Editor

STRENGTH

in packaging is important, too!

"Record dust covers get hard use. In the store. By consumers. Because VISQUEEN film makes stronger packages, the merchandise is re-sold each time the package is used. Such creative packaging by Wrapture *moves goods, keeps record buyers happy."*

Mort L. Nasatir
Director, Advertising
and Merchandising,
Decca Records, Inc.

VISQUEEN film's superior strength eliminates breakage. Resists impact, puncture. Won't crack, split, shatter or run. Production advantages result: better machinability; less down-time; higher speeds.

VISQUEEN film's greater strength gives greater tear resistance; higher tensile strength; consistent elongation.

Superior strength is only one reason VISQUEEN film is strongly preferred by leading packagers. Others: VISQUEEN film is more uniform; stiffness and body make fabrication easier; treated film prevents ink rub-off; longer experience and greater research facilities of VISKING technicians assures better quality—and quality cuts packaging costs.

Write us or use information request tag for detailed information.

VISQUEEN *film is all polyethylene, but not all polyethylene film is VISQUEEN. Only VISQUEEN film has the benefit of research and resources of VISKING COMPANY.*

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